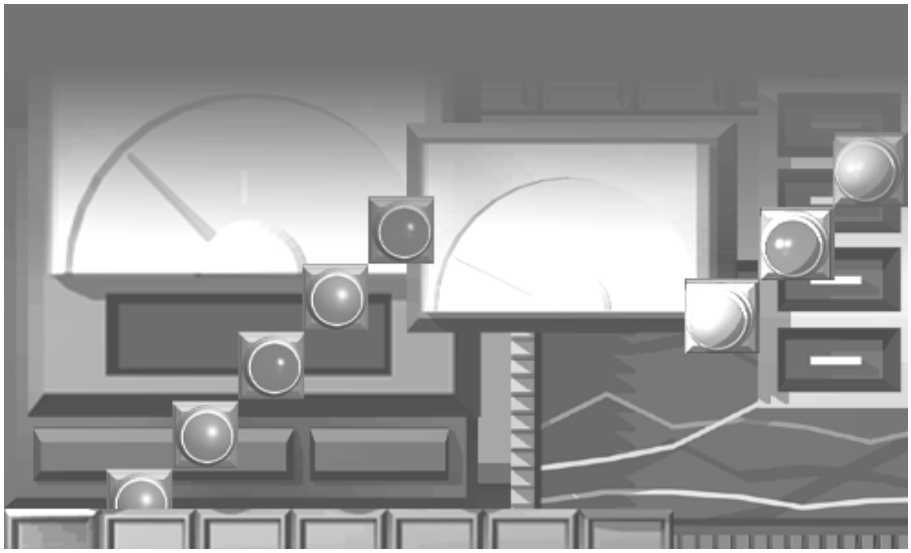
MITSUBISHI

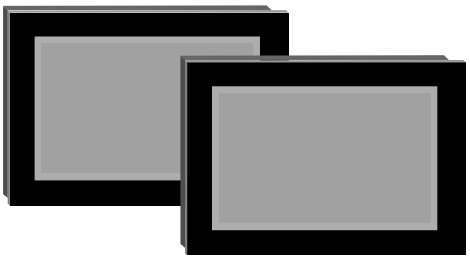
A985GOT/A975GOT/A970GOT/A960GOT

User's Manual



Graphic Operation Terminal

900 series



MITSUBISHI Graphic Operation Terminal

A985GOT-TBA(-EU)(-V)/TBD(-V)
A975GOT-TBA(-EU)(-B)/TBD(-B)
A970GOT-TBA(-EU)(-B)/TBD(-B)
A970GOT-SBA(-EU)/SBD
A970GOT-LBA(-EU)/LBD
A960GOT-EBA(-EU)/EBD

• SAFETY PRECAUTIONS •

(Always read these instructions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The instructions given in this manual are concerned with this product. For the safety instructions of the programmable controller system, please read the CPU module user's manual.
In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

⚠ DANGER	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the ⚠CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[Design Precautions]

⚠ DANGER

- Some failures of the GOT, communication unit, communication board or cable may keep the outputs on or off.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.
- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  For bus connection : The CPU becomes faulty and the GOT becomes inoperative.
  For other than bus connection : The GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.
- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[Design Precautions]

⚠ DANGER

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the display section turns black and causes the monitor screen to appear blank, while the input of the touch switch(s) still remains active.
  This may confuse an operator in thinking that the GOT is in “screensaver” mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  - The monitor screen disappears even when the screensaver is not set.
  - The monitor screen will not come back on by touching the display section, even if the screensaver is set.

⚠ CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm apart.
  Not doing so noise can cause a malfunction.

[Mounting Precautions]

⚠ DANGER

- Before installing or removing the GOT to or from the control panel, always switch off the GOT power externally in all phases.
  Not doing so can cause the GOT to fail or malfunction.
- Before loading or unloading the communication board, communication unit or memory board to or from the GOT, always switch off the GOT power externally in all phases.
  Not doing so can cause the unit to fail or malfunction.

⚠ CAUTION

- The GOT should be used in the environment given in the general specifications of the GOT user's manual.
  Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.

[Mounting Precautions]

⚠ CAUTION

- When loading the communication board or communication unit to the GOT, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range.
  Undertightening can cause a drop, failure or malfunction.
  Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit.
- When loading the memory board into the GOT, load it into its corresponding GOT slot and tighten the mounting screws in the specified torque range.
  Undertightening can cause a malfunction due to a poor contact.
  Overtightening can cause a malfunction due to the damage of the screws or the GOT.
- When loading the PC card into the GOT, insert and push it into its corresponding GOT slot until the PC card eject button comes up.
  Not doing so can cause a malfunction due to a poor contact.
- Before loading or unloading the PC card to or from the GOT, set the memory card access switch to the OFF position.
  Not doing so can cause the PC card data to be corrupted.
- When taking out the PC card, hold it with one hand and remove.
  If removed without a hand support, the PC card may drop, resulting in breakage or damage.

[Wiring Precautions]

⚠ DANGER

- Before starting wiring, always switch off the GOT power externally in all phases.
  Not doing so may cause an electric shock, product damage or malfunction.

⚠ CAUTION

- Please make sure to ground FG terminal, LG terminal, and protective ground terminal of the GOT power supply section by applying Class D Grounding (Class 3 Grounding Method) or higher which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.
- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product.
  Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT.
  Not doing so can cause a fire, failure or malfunction.

[Wiring Precautions]

⚠ CAUTION

- Plug the bus connection cable by inserting it into the connector of the connected unit until it "clicks".
  After plugging, check that it has been inserted snugly.
  Not doing so can cause a malfunction due to a contact fault.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[Test Operation Precautions]

⚠ DANGER

- Before performing test operation (bit device on/off, word device's present value changing, timer/counter's set value and present value changing, buffer memory's present value changing) for a user-created monitor screen, system monitoring, special module monitoring or ladder monitoring, read the manual carefully to fully understand how to operate the equipment.
  During test operation, never change the data of the devices which are used to perform significant operation for the system.
  False output or malfunction can cause an accident.

[Startup/Maintenance Precautions]

⚠ DANGER

- When power is on, do not touch the terminals.
  Doing so can cause an electric shock or malfunction.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases.
  Not switching the power off in all phases can cause a unit failure or malfunction.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

⚠ CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.

[Startup/Maintenance Precautions]

⚠ CAUTION

- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.

[Backlight Changing Precautions]

⚠ DANGER

- Before changing the backlight, always switch off the GOT power externally in all phases (when the GOT is connected to the bus, the PLC CPU power must also be switched off externally in all phases) and remove the GOT from the control panel.

  Not switching the power off in all phases may cause an electric shock.
  Not removing the unit from the control panel can cause injury due to a drop.

⚠ CAUTION

- When replacing the backlight, use the gloves.
  Otherwise, it may cause you to be injured.
  If you should directly touch the plated area of the main unit case with hand, be sure to wipe off the fingerprint and so on, and install the main unit case.
  Otherwise, it may cause a trouble or malfunction.
- Start changing the backlight more than 5 minutes after switching the GOT power off.
  Not doing so can cause a burn due to the heat of the backlight.

[Disposal Precautions]

⚠ CAUTION

- When disposing of the product, handle it as industrial waste.

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REVISIONS

*The manual number is given on the bottom left of the back cover..

Print Date	*Manual Number	Revision
Sep, 1998	SH(NA)-4005-A	First edition
Feb, 1999	SH(NA)-4005-B	Addition Section 1.1, 2.1, 2.2, 3.2, 3.3, 4.1, 4.2, 6.1, 6.3, 6.10, 6.11, 6.12, 6.13, 7.4, Appendix 1,2 A985GOT-TBA/TBD
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Mar, 2000	SH(NA)-4005-D	Partial corrections Section 2.1, 3.1, 6.1, 6.3, 6.5, 6.12, 7.4, Appendix 1, 2, 3 Partial additions Section 2.2, 3.2, 3.3, 6.4, 6.6, 6.7 Addition Section 2.3, 2.4, 6.14, 8.5 A985GOT-TBA-EU, A970GOT-LBA/LBD
Dec, 2000	SH(NA)-4005-E	Partial corrections Chapter 5, Section 2.1, 2.3, 6.5, 6.7, 6.8, 6.9, 6.11, 6.12, 8.3 Partial additions Chapter 1, Section 1.1, 2.2, 2.4, 3.2, 3.3, 4.1, 6.1, 6.3, 6.4, 6.6, 6.10, 7.4, 8.2, Appendix 1,2 Addition Section 6.1.6, 6.1.7, 6.15, A985GOT-TBA-V, A985GOT-TBD-V
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REVISIONS

*The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
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Sep., 2004	SH(NA)-4005-M	Partial corrections Section 6.1.3 MODEL CODE change Changed from 13JL70 to 1DM099

Japanese Manual Version SH-3311-O

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INTRODUCTION

Thank you for choosing the Mitsubishi Graphic Operation Terminal.
Before using the equipment, please read this manual carefully to use the equipment to its optimum.
A copy of this manual should be forwarded to the end user.

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About the manuals

For details of the manuals relevant to this product, refer to the PDF manual stored within the drawing software used.

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Abbreviations and generic terms in this manual

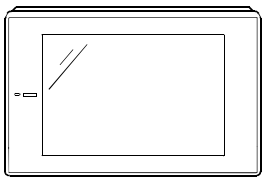
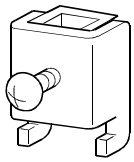
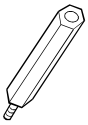
Abbreviations and generic terms used in this manual are described as follows:

Abbreviations and generic terms		Description
GOT	A985GOT-V	Generic term of A985GOT-TBA-V and A985GOT-TBD-V
	A985GOT	Generic term of A985GOT-TBA, A985GOT-TBD and A985GOT-TBA-EU
	A975GOT	Generic term of A975GOT-TBA-B, A975GOT-TBD-B, A975GOT-TBA, A975GOT-TBD and A975GOT-TBA-EU
	A970GOT	Generic term of A970GOT-TBA-B A970GOT-TBD-B, A970GOT-TBA, A970GOT-TBD, A970GOT-SBA, A970GOT-SBD, A970GOT-LBA, A970GOT-LBD, A970GOT-TBA-EU, A970GOT-SBA-EU and A970GOT-LBA-EU
	A97 * GOT	Generic term of A975GOT and A970GOT
	A960GOT	Generic term of A960GOT-EBA, A960GOT-EBD and A960GOT-EBA-EU
Communica-tion board	Bus connection board	Generic term of A9GT-QBUSS, A9GT-QBUS2S, A9GT-BUSS and A9GT-BUS2S
	Serial communication board	Generic term of A9GT-RS4, A9GT-RS2 and A9GT-RS2T
Communica-tion unit	Bus connection unit	Generic term of A9GT-BUSSU and A9GT-BUS2SU
	Data link unit	Generic term of A7GT-J71AP23, A7GT-J71AR23 and A7GT-J71AT23B
	Network unit	Generic term of A9GT-QJ71LP23, A9GT-QJ71BR13, A7GT-J71LP23 and A7GT-J71BR13
	CC-Link communication unit	Generic term of A8GT-J61BT13 and A8GT-J61BT15
	Ethernet communication unit	Abbreviation of A9GT-J71E71-T
Option unit	External I/O interface unit	Abbreviation of A9GT-70KBF type external I/O interface unit
	Video/RGB hybrid interface unit	Abbreviation of A9GT-80V4R1 type Video/RGB hybrid interface unit
	Video input interface unit	Abbreviation of A9GT-80V4 type Video input interface unit
	RGB input interface unit	Abbreviation of A9GT-80R1 type RGB input interface unit
Option	Backlight	Abbreviation of A9GT-80LTT, A9GT-70LTTBW, A9GT-70LTTB, A9GT-70LTT and A9GT-70LTS type backlights
	Debug stand	Abbreviation of A9GT-80STAND and A9GT-70STAND type debug stand
	Memory board	Abbreviation of A9GT-FNB, A9GT-FNB1M, A9GT-FNB2M, A9GT-FNB4M, A9GT-FNB8M, A9GT-QFNB, A9GT-QFNB4M, A9GT-QFNB8M type option function memory board
	Ten-key Panel	Abbreviation of A8GT-TK ten-key Panel
	A7GT-CNB	Abbreviation of A7GT-CNB bus connector conversion box
	A9GT-QCNB	Abbreviation of A9GT-QCNB bus connector conversion box
	Protection sheet	Abbreviation of A9GT-80PSC, A9GT-70PSC and A9GT-60PSC type transparent protection sheets
	Attachment	Generic term of A77GT-96ATT/A87GT-96ATT/A87GT-97ATT attachments
	PC card (memory card)	Abbreviation of PC card with PCMCIA Ver.2.1
	Flash PC card	Generic term of A9GTMEM-10MF, A9GTMEM-20MF and A9GTMEM-40MF
	Compact flash PC card	Compact flash PC card compliant with Compact FlashTM
Software	GT Works Version5	Abbreviation of SW5D5C-GTWORKS-E(-V) software
	GT Designer Version5	Abbreviation of SW5D5C-GOTR-PACKE(V) software
	GT Works2 Version1	Abbreviation of SW1D5C-GTWK2-E software
	GT Designer2 Version1	Abbreviation of SW1D5C-GTD2-E software
	GT Designer	Abbreviation of image creation software GT Designer for GOT900
	GT Designer2	Abbreviation of image creation software GT Designer2 for GOT900
	GT Simulator	Abbreviation of GT Simulator screen simulator GOT900
	GT Simulator2	Abbreviation of GT Simulator2 screen simulator GOT900
	GT Converter	Abbreviation of data conversion software GT Converter for GOT900
	GT Debugger	Abbreviation of debugging software GT Debugger
	GT Manager	Abbreviation of GT Manager data editing software for GOT900
	GT SoftGOT	Abbreviation of GT SoftGOT monitoring software
	GT SoftGOT2	Abbreviation of GT SoftGOT2 monitoring software
	GX Developer	Generic term of SW□D5C-GPPW-E/SW□D5F-GPPW-E software packages
	GX Simulator	Generic term of SW□D5C-LLT-E ladder logic test tool function software package (SW5D5C-LLT-E or later)

Abbreviations, generic terms and special terms		Description
CPU	QCPU (Q Mode)	Generic term of Q00JCPU, Q00CPU, Q01CPU,Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU and Q25PHCPU CPU
	QCPU (A Mode)	Generic term of Q02CPU-A, Q02HCPU-A and Q06HCPU-A CPU
	QCPU	Generic term of QCPU (Q Mode) and QCPU (A Mode)
	QnACPU Type	Generic term of Q2ACPU, Q2ACPU-S1, Q2AHCPU, Q2AHCPU-S1, Q3ACPU, Q4ACPU and Q4ARCPU CPU
	QnASCPU Type	Generic term of Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU and Q2ASHCPU-S1 CPU
	QnACPU	Generic term of QnACPU Type and QnASCPU Type
	AnUCPU	Generic term of A2UCPU, A2UCPU-S1, A3UCPU and A4UCPU CPU
	AnACPU	Generic term of A2ACPU, A2ACPU-S1 and A3ACPU CPU
	AnNCPU	Generic term of A1NCPU, A2NCPU, A2NCPU-S1 and A3NCPU CPU
	AnCPU Type	Generic term of AnUCPU, AnACPU and AnNCPU CPU
	AnUS(H)CPU	Generic term of A2USCPU, A2USCPU-S1 and A2USHCPU-S1 CPU
	AnS(H)CPU	Generic term of A1SCPU, A1SCPUC24-R2, A2SCPU, A2SCPU-S1, A1SHCPU, A2SHCPU and A2SHCPU-S1 CPU
	A1SJ(H)CPU	Generic term of A1SJCPU, A1SJCPU-S3 and A1SJHCPU CPU
	AnSCPU Type	Generic term of A2US(H)CPU, AnS(H)CPU and A1SJ(H)CPU CPU
	ACPU	Generic term of AnCPU Type, AnSCPU Type, A1FXCPU, A0J2HCPU, A2CCPU, A2CCPU24 and A2CJCPU CPU
	FXCPU	Generic term of FX0 series, FX0N series, FX0S series, FX1 series, FX1N series, FX1S series, FX2 series , FX2C series, FX2N series, FXINS series and FX2NC series CPU
	Motion controller CPU	Generic term of A273UCPU, A273UHCPU, A273UHCPU-S3, A373CPU, A373UCPU, A373UCPU-S3, A171SCPU, A171SCPU-S3, A171SCPU-S3N, A171SHCPU, A171SHCPUN, A172SHCPU, A172SHCPUN, A173UHCPU, A173UHCPU-S1 CPU
	FA controller	Generic term of LM610, LM7600, LM8000 CPU
Peripheral connection module	G4	Abbreviation of AJ65BT-G4-S3
Ethernet module	E71	Generic term of AJ71E71-S3, AJ71E71N-T, AJ71E71N-B2, AJ71E71N-B5, AJ71E71N-B5T, A1SJ71E71-B2-S3, A1SJ71E71-B5-S3, A1SJ71E71N-T, A1SJ71E71N-B2, A1SJ71E71N-B5 and A1SJ71E71N-B5T
	QE71	Generic term of AJ71QE71, AJ71QE71-B5, AJ71QE71N-T, AJ71QE71N-B2, AJ71QE71N-B5, AJ71QE71N-B5T, A1SJ71QE71-B2, A1SJ71QE71-B5, A1SJ71QE71N-T, A1SJ71QE71N-B2, A1SJ71QE71N-B5 and A1SJ71QE71N-B5T
	Q series-compatible E71	Generic term of QJ71E71, QJ71E71-B2, QJ71E71-B5, QJ71E71-100
Other PLC	Omron PLC	Generic term of C200HS, C200H, C200Hα series(C200HX, C200HG, C200HE), CQM1, C1000H,C2000H,CV500, CV1000, CV2000, CVM1-CPU11, CVM1-CPU21, CS1, CS1D, CJ1M, CPM1, CPM1A, CPM2A, CPM2C CPU, CQM1H
	Yaskawa PLC	Generic term of GL60S, GL60H, GL70H, GL120, GL130, CP-9200SH, CP-9300MS, MP-920, MP-930, MP-940, CP-9200(H) and PROGIC-8 CPU
	SLC500 Series	Generic term of SLC500-20, SLC500-30, SLC500-40, SLC5/01 SLC5/02, SLC5/03, SLC5/04 SLC5/05
	MicroLogix1000 Series	Generic term of 1761-L10BWA, 1761-L10BWB, 1761-L16AWA, 1761-L16BWA, 1761-L16BWB, 1761-L16BBB, 1761-L32AWA, 1761-L32BWA, 1761-L32BWB, 1761-L32BBB, 1761-L32AAA, 1761-L20AWA-5A, 1761-L20BWA-5A, 1761-L20BWB-5A
	MicroLogix1500 Series	Abbreviation of 1764-LSP
	Allen-Bradley PLC	Generic term of SLC 500 Series, MicroLogix1000 Series, MicroLogix1500 Series
	Sharp PLC	Generic term of JW-21CU, JW-22CU, JW-31CUH, JW-32CUH, JW-33CUH, JW-50CUH, JW-70CUH, JW-100CUH, JW-100CU, Z-512J CPU
	PROSEC T Series	Generic term of T2(PU224 type), T2E, T2N, T3, T3H CPU
	PROSEC V Series	Generic term of S2T and Model3000(S3) CPU
	Toshiba PLC	Generic term of PROSEC T Series and PROSEC V Series
	SIEMENS PLC	Generic term of SIMATIC S7-300 Series and SIMATIC S7-400 Series CPU
	Large type H series	Generic term of H-302(CPU2-03H), H-702(CPU2-07H), H-1002(CPU2-10H), H-2002(CPU2-20H), H-4010(CPU3-40H),.J-300(CPU-03Ha), H-700(CPU-07Ha), H-2000(CPU-20Ha)
	H200 to 252 Series	Generic term of H-200(CPU-02H, CPE-02H), H-250(CPU21-02H), H-252(CPU22-02H), H-252B(CPU22-02HB), H-252C(CPU22-02HC, CPE22-02HC)
	H Series board type	Generic term of H-20DR, H-28DR, H-40DR, H-64DR, H-20DT, H-28DT, H-40DT, H-64DT, HL-40DR, HL-64DR
	EH-150 Series	Generic term of EH-CPU104, EH-CPU208, EH-CPU308, EH-CPU316
	HITACHI PLC (HIDIC H Series)	Generic term of large type H series,H-200 to 252 Series H Series board type, EH-150 Series
	Matsushita Electric Works PLC	Generic term of FP0-C16CT, FP0-C32CT, FP1-C24C, FP1-C40C, FP2, FP2SH, FP3, FP5, FP10(S), FP10SH, FP-M(C20TC) and FP-M(C32TC)
Others	Memory	abbreviation of memory (flash memory) in the GOT
	OS	Abbreviation of GOT system software
	Object	Setting data for dynamic image
	Personal Computer	Personal computer where the corresponding software package is installed
	Servo amplifier	Generic term of the MR-J2S-□A, MR-J2S-□CP and MR-J2M A series
	MELDAS C6/C64	Generic term of the FCA C6, FCA C64

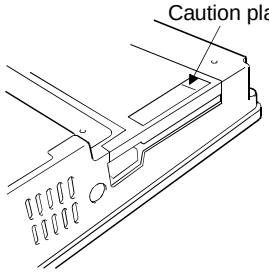
Packing list

After unpacking, confirm that the following parts are included.

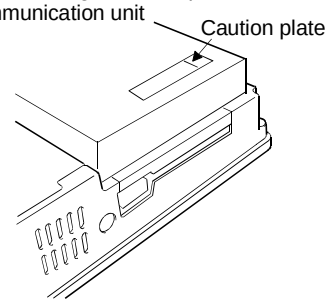
Product	Quantity
GOT main unit 	1
Mounting fixture 	4
Communication unit securing fixture 	3
Caution plate (seal) ∗1	1
A975GOT-TBA/TBD(-B), A970GOT-TBA/TBD(-B), A970GOT-SBA/SBD, A970GOT-LBA/LBD, A960GOT-EBA/EBD User's Manual (Hardware) ∗2	1
A985GOT-TBA-EU, A975GOT-TBA-EU, A970GOT-TBA-EU, A970GOT-SBA-EU, A970GOT-LBA-EU, A960GOT-EBA-EU User's Manual (Hardware) ∗2	
A985GOT-TBA/TBD(-V) User's Manual (Hardware) ∗2	

∗1: Affix a caution plate in a conspicuous position such as memory card interface part. (Affix a caution plate on a communication unit during its use.)
The caution plate is included only in the following GOT models.
A97∗GOT (except -EU): Hardware version L (jun., 2001) or later.
A960GOT (except -EU): Hardware version H (jun., 2001) or later.

When affixing a coution plate on the memory card interface



When affixing a coution plate on the communication unit



∗2: Changes with the GOT you purchased.

A - 14

1 OVERVIEW

This user's manual explains the specifications, handling and other information of the GOT-A900 series graphic operation terminal (abbreviated to the GOT).

The GOT can be used as an electronic operator panel which has achieved on its monitor screen the switch operation, lamp indication, data display, message display and other operations which were previously performed on an operator panel.

The following GOT types are available.

Type	Rough Specifications				
	Power supply type	Display color [Color]	Display section	Resolution [Dots]	Screen size [cm]
A985GOT-TBA- V	100 to 240VAC	256 (During image display: 65536)	TFT color liquid crystal	800 × 600	31 (12inch)
A985GOT-TBD- V	24VDC				
A985GOT-TBA	100 to 240VAC	256			
A985GOT-TBD	24VDC				
A985GOT-TBA-EU	100 to 240VAC				
A975GOT-TBA	100 to 240VAC			640 × 480	26 (10inch)
A975GOT-TBD	24VDC				
A975GOT-TBA-B	100 to 240VAC				
A975GOT-TBD-B	24VDC				
A975GOT-TBA-EU	100 to 240VAC				
A970GOT-TBA	100 to 240VAC	16			
A970GOT-TBD	24VDC				
A970GOT-TBA-B	100 to 240VAC				
A970GOT-TBD-B	24VDC				
A970GOT-TBA-EU	100 to 240VAC				
A970GOT-SBA	100 to 240VAC	8	D-STN color liquid crystal		
A970GOT-SBD	24VDC				
A970GOT-SBA-EU	100 to 240VAC				
A970GOT-LBA	100 to 240VAC	2 (Monochrome)	STN monochrome liquid crystal		
A970GOT-LBD	24VDC				
A970GOT-LBA-EU	100 to 240VAC				
A960GOT-EBA	100 to 240VAC	2 (Yellow orange, black)	EL	640 × 400	23 (9inch)
A960GOT-EBD	24VDC				
A960GOT-EBA-EU	100 to 240VAC				

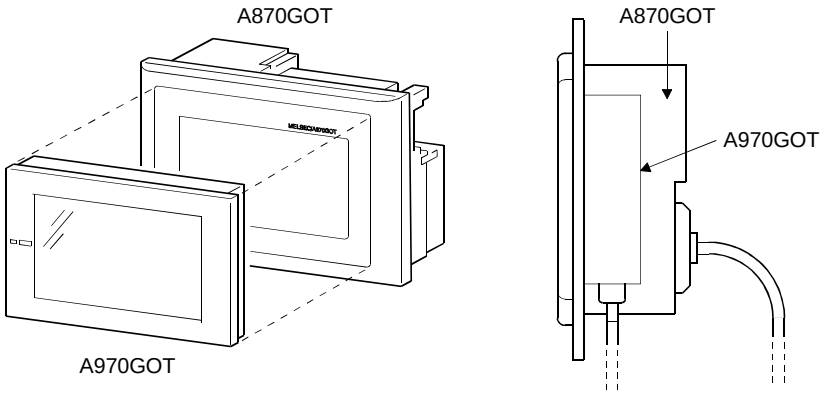
1.1 Features

1

(1) Compact display device in pursuit of mounting, external dimensions and thinness

With the display screen size identical to that of the conventional type, the external dimensions and depth are substantially reduced to achieve a compact size and thin design.

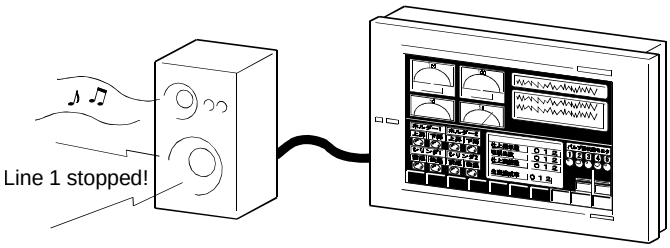
The GOT is designed to connect cables at its bottom to ensure that extra space is not needed for the connectors and bending of the cables when the GOT is mounted on a control panel or the like.



(2) User-friendly multimedia display device

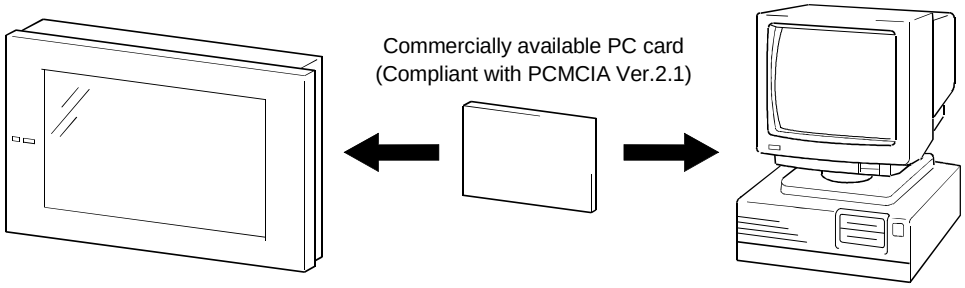
Clear, high-grade display has been achieved by 256-color representation. (A975GOT, A985GOT(-V) only)

Ear-appealing information transmission has also been achieved by supporting speech output using the Windows WAV file.



(3) Fast data transfer of OS and screen data by memory card

The PC card for OS and screen data can be created easily on a personal computer. By loading the created card into the GOT, you can exchange the OS and screen data rapidly. (RS-232C data transfer can also be made as conventionally.)



(4) Compatible with a wide variety of connection forms

The GOT is compatible with various connection forms such as the MELSEC and computer link connections, including the bus connection which permits fast communication. You can choose the connection form matching the system.

(5) Heavy-duty body usable in rigorous environment and operation

The display section of the GOT complies with the IP65f, IP67f and NEMA4 Waterproof, Dustproof Standard and is usable in a wide range of environment.

(6) Maintenance function further enhanced in affinity with PLC

- Supporting the factor search mode which searches for the contact of a failure factor at the device search time in the ladder monitoring function, the GOT has shortened the failure factor analysis time.
- Upgraded alarm history function
  The GOT can support the failure occurrence counting function, cumulative failure time totalizing function and history printing function, and start ladder monitoring with the corresponding device searched with a single keystroke at the failure detail display time.

(7) Improvement of safety by upgraded security function

- Supporting the operation protective function using up to 16 levels of passwords, the GOT can hide the display or disable input operation according to the password level. You can achieve hidden screens and hidden operations and easily change the display data per GOT used.
- You can specify the time delay function (ON delay/OFF delay) of the touch switches, double-pushing switches and interlock conditions to reduce malfunctions due to wrong key pushing.

(8) Energy saving mode using human sensor (A985GOT(-V) only)

- The human sensor detects operators in the sensor detection area and turns the backlight ON/OFF automatically.
  The backlight can be turned off automatically if no operator motions are not detected for a given period of time. (This time can be set by the user.)

1.2 Requirements to meet EMC Directive

EMC Directives which are among European Directives become forced.
EMC Directives are those which require "any strong electromagnetic force is not output to the external.: Emission (electromagnetic interference)" and "It is influenced by the electromagnetic wave from the external.: Immunity (electromagnetic sensitivity)".
Items 1.2.1 thru 1.2.3 summarize the precautions to use GOT and configure the mechanical unit in order to match the EMC directives.
Though the data described herein are produced with our best on the basis of the requirement items and standards of the restrictions gathered by Mitsubishi, they do not completely guaranteed that all mechanical unit manufactured according to the data do not always match the above directives. The manufacturer itself which manufactures the mechanical unit must finally judge the method and others to match the EMC directives.

1.2.1 EMC Directive

The standards of the EMC Directive are shown below.

Specification	Test item	Test details	Standard value
EN61000-6-4 : 2001	EN55011 Radiated noise ＊2	Electromagnetic emissions from the product are measured.	30 M-230 MHz QP: 30 dBμ V/m (30 m in measurement range) ＊1 230 M-1000 MHz QP: 37 dBμ V/m (30 m in measurement range)
	EN55011 Conducted noise ＊2	Electromagnetic emissions from the product to the power line is measured.	150 k-500 kHz QP: 79 dB, Mean: 66 dB ＊1 500 k-30 MHz QP: 3 dB, Mean: 60 dB
EN61131-2 : 1994/A12 (2000)	EN61000-4-2 Electrostatic immunity ＊2	Immunity test in which static electricity is applied to the cabinet of the equipment.	±15kV Aerial discharge
	EN61000-4-4 Fast transient burst noise ＊2	Immunity test in which burst noise is applied to the power line and signal lines.	Power line: 2kV Digital I/O (24V or higher): 1kV (Digital I/O (24V or less)) > 250V (Analog I/O, signal lines) > 250V
	EN61000-4-3 Radiated field AM modulation ＊2	Immunity test in which field is irradiated to the product.	10V/m, 26-1000 MHz, 80%AM modulation@1 kHz
	EN61000-4-12 Damped oscillatory wave immunity ＊2	Immunity test in which a damped oscillatory wave is superimposed on the power line.	Power line: 1kV Digital I/O (24V or higher): 1 kV

＊1 QP: Quasi-peak value, Mean: Average value

＊2 The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel.
The above test items are conducted in the condition where the GOT is installed on the conductive control panel and combined with the Mitsubishi PLC.

1.2.2 Installation inside Control Panel

The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel.
It not only assure the safety but also has a large effect to shut down the noise generated from GOT, on the control panel.

1) Control panel

a) The control panel must be conductive.

b) When fixing a top or bottom plate of the control panel with bolts, do not coat the plate and bolt surfaces so that they will come into contact.
And connect the door and box using a thick grounding cable in order to ensure the low impedance under high frequency.

c) When using an inner plate to ensure electric conductivity with the control panel, do not coat the fixing bolt area of the inner plate and control panel to ensure conductivity in the largest area as possible.

d) Ground the control panel using a thick grounding cable in order to ensure the low impedance under high frequency.

e) The diameter of cable holes in the control panel must be 10cm (3.94in.). In order to reduce the chance of radio waves leaking out, ensure that the space between the control panel and its door is small as possible.
Attach some EMI gaskets to fill up the space and suppress the leakage of radio waves.
Our test have been carried out on a panel having the damping characteristics of 37 dB max. and 30 dB mean (measured by 3m method with 30 to 300 MHz).

2) Connection of power and ground wires

Ground and power supply wires for the GOT must be connected as described below.

a) Provide an earthing point near the GOT. Earth the power supply's LG and FG terminals (LG : Line Ground, FG : Frame Ground) with the thickest and shortest wire possible. (The wire length must be 30cm (11.18in.) or shorter.)
The LG and FG terminals function is to pass the noise generated in the PLC system to the ground, so an impedance that is as low as possible must be ensured. As the wires are used to relieve the noise, the wire itself carries a large noise content and thus short wiring means that the wire is prevented from acting as an antenna.
Note) A long conductor will become a more efficient antenna at high frequency.

b) The earth wire led from the earthing point must be twisted with the power supply wires. By twisting with the earthing wire, noise flowing from the power supply wires can be relieved to the earthing. However, if a filter is installed on the power supply wires, the wires and the earthing wire may not need to be twisted.

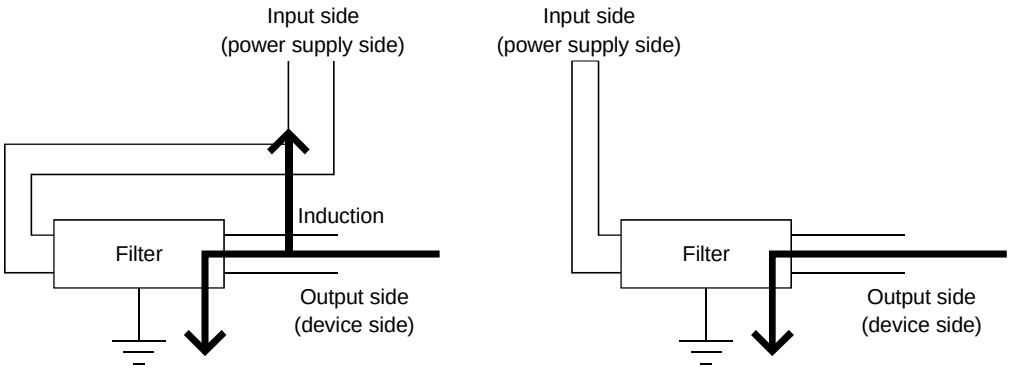
1.2.3 Noise filter (power supply line filter)

The noise filter (power supply line filter) is a device effective to reduce conducted noise. Except some models, installation of a noise filter onto the power supply lines is not necessary. However conducted noise can be reduced if it is installed. (The noise filter is generally effective for reducing conducted noise in the band of 10MHz or less.) Usage of the following filters is recommended.

Model name	FN343-3/01	FN660-6/06	ZHC2203-11
Manufacturer	SCHAFFNER	SCHAFFNER	TDK
Rated current	3A	6A	3A
Rated voltage	250V		

The precautions required when installing a noise filter are described below.

1) Do not install the input and output cables of the noise filter together to prevent the output side noise will be inducted into the input side cable where noise has been eliminated by the noise filer



a) Installing the input and output cables together will cause noise induction.

b) Cable from the output cable.

2) Connect the noise filter's ground terminal to the control panel with the shortest cable as possible (approx. 10cm (3.94in) or less).

1.3 Requirements for compliance with the Low Voltage Directive

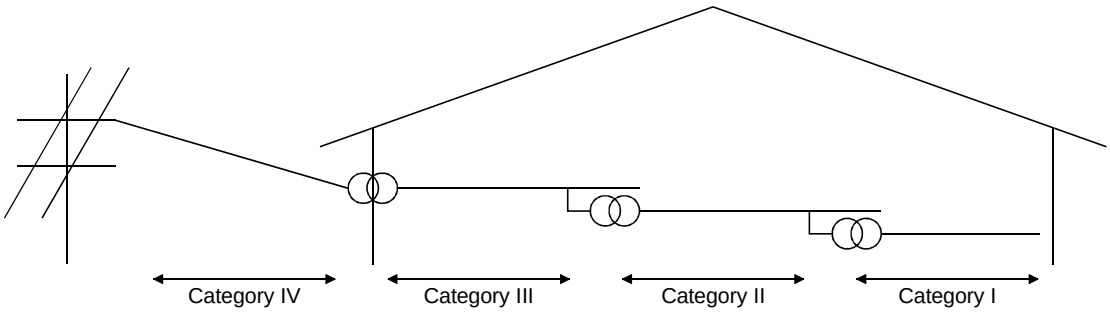
The Low Voltage Directive is mandatory within Europe, effective 1st January 1997.
The Low Voltage Directive requires each device which operates with power supply ranging from 50VAC to 1000V and 75VDC to 1500V to satisfy necessary safety items.
In the Sections from 1.3.1 to 1.3.5, cautions on installation and wiring of the GOT to conform to the Low Voltage Directive requires are described.
We have put the maximum effort to develop this material based on the requirements and standards of the Directive that we have collected. However, compatibility of the devices which are fabricated according to the contents of this manual to the above Directive is not guaranteed. Each manufacturer who fabricates such device should make the final judgement about the application method of the Low Voltage Directive and the product compatibility.

1.3.1 Standard subject to for GOT

The standard subject to for GOT is EN61010-1 safety of devices used in measurement rooms, control rooms, or laboratories.

1.3.2 Power supply

The insulation specification of the GOT was designed assuming installation category II. Be sure to use the installation category II power supply to the GOT.
The installation category indicates the durability level against surge voltage generated by lightning strike. Category I has the lowest durability; category IV has the highest durability.



Installation Category

Category II indicates a power supply whose voltage has been reduced by two or more levels of isolating transformers from the public power distribution.

1.3.3 Control Panel

Because the GOT is open type equipment (device designed to be stored within another device), be sure to use it only when installed in a control panel.

1) Shock protection

In order to prevent those who are unfamiliar with power facility, e.g., an operator, from getting a shock, make sure to take the following measures on the control panel.

a) Store the GOT within the control panel locked, and allow only those who are familiar with power facility to unlock the panel.
b) Build the structure in order that the power supply will be shut off when the control panel is opened.

2) Dustproof and waterproof features

The control panel also provides protection from dust, water and ether substances. Insufficient ingression protection may lower the insulation withstand voltage, resulting in insulation destruction. The insulation in the GOT is designed to cope with the pollution level 2, so use in an environment with pollustion level 2 or higher.

Pollution level 1 :	An environment where the air is dry and conductive dust does not exist.
Pollution level 2 :	An environment where conductive dust does not usually exist, but occasional temporary conductivity occurs due to the accumulated dust. Generally, this is the level for inside the control panel equivalent a control room or on the floor of a typical factory.
Pollution level 3 :	An environment where conductive dust exits and conductivity may be generated due to the accumulated dust. An environment for a typical factory floor.
Pollution level 4 :	Continuous conductivity may occur due to rain, snow, etc. An outdoor environment.

1.3.4 Grounding

There are two kinds of grounding terminals as shown below. Both terminals must be grounded.
Be sure to ground the grounding for the safety reasons and EMC Directives.

Protective grounding :	Maintains the safety of the GOT and improves the noise resistance.
Functional grounding :	Improves the noise resistance.

1.3.5 External wiring

1) External devices

When a device with a hazardous voltage circuit is externally connected to the PLC, select a model which complies with the Low Voltage Directive's requirements for isolation between the primary and secondary circuits.

2) Insulation requirements

Dielectric withstand voltages are shown in the following table.

Reinforced Insulation Withstand Voltage
(Installation Category II, source : IEC664)

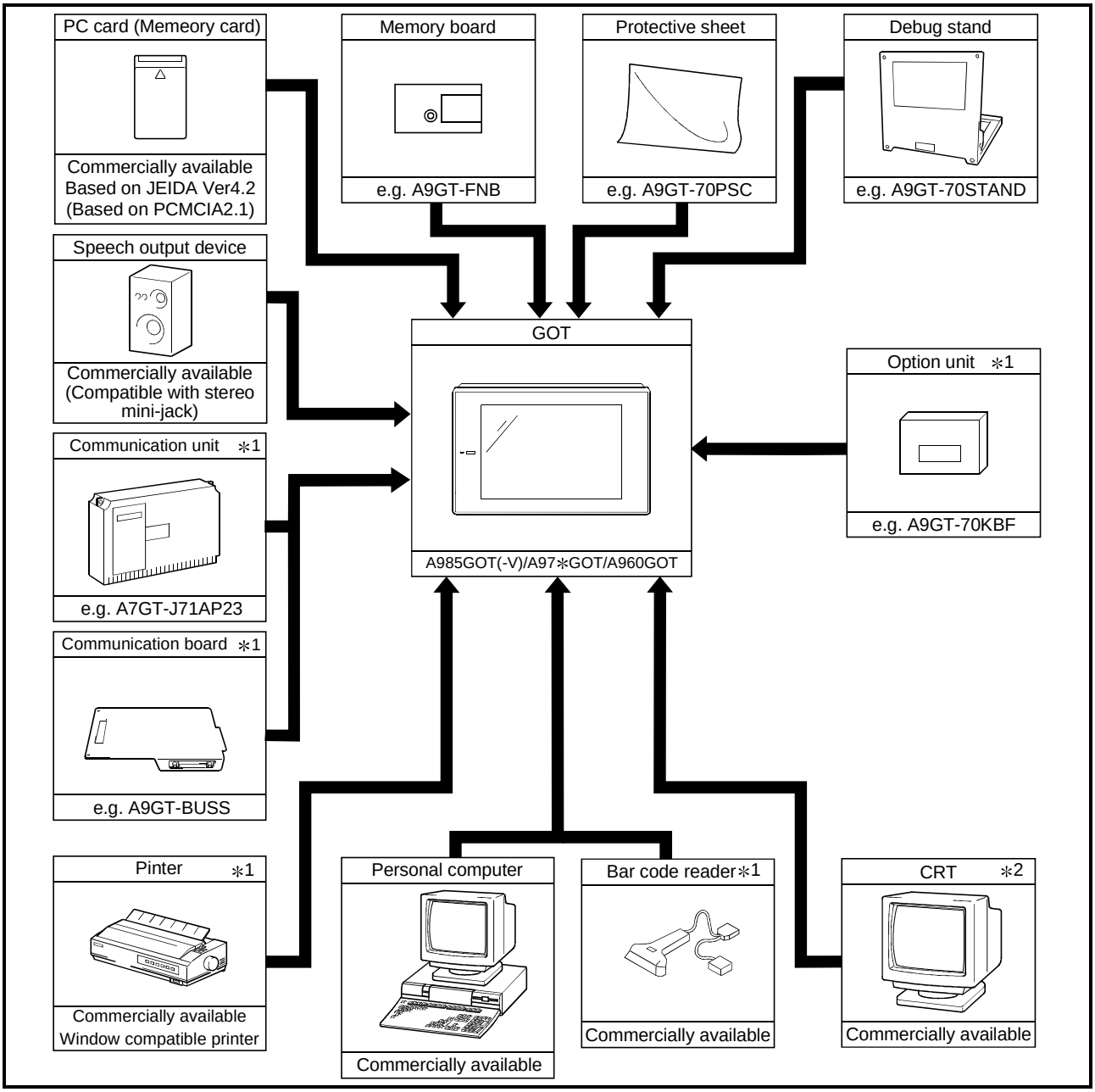
Rated voltage of hazardous voltage area	Surge withstand voltage (1.2/50 μs)
150 VAC or below	2500V
300 VAC or below	4000V

2 SYSTEM CONFIGURATION

This chapter explains the system configuration of the GOT.

2.1 Overall Configuration

The overall configuration of the GOT is shown below.



*1: For details of the system configuration, refer to the [GOT-A900 Series User's Manual (Connection System Manual)].
*2: Only the A985GOT may be connected to the CRT. (A985GOT-V can not be used.)

2.2 Component List

Component	Type	Description
A985GOT-V	A985GOT-TBA-V	31cm (12inch), 256 color display, TFT color liquid crystal, 100 to 240VAC, Video/RGB display supports
	A985GOT-TBD-V	31cm (12inch), 256 color display, TFT color liquid crystal, 24VDC, Video/RGB display supports
A985GOT	A985GOT-TBA	31cm (12inch), 256 color display, TFT color liquid crystal, 100 to 240VAC, built-in CRT interface
	A985GOT-TBD	31cm (12inch), 256 color display, TFT color liquid crystal, 24VDC, built-in CRT interface
	A985GOT-TBA-EU	31cm (12inch), 256 color display, TFT color liquid crystal, 100 to 240VAC, built-in CRT interface, EMC Directive and Low Voltage Directive compliant product
A975GOT	A975GOT-TBA	26cm (10inch), 256 color display, TFT color liquid crystal, 100 to 240VAC
	A975GOT-TBD	26cm (10inch), 256 color display, TFT color liquid crystal, 24VDC
	A975GOT-TBA-B	26cm (10inch), 256 color display, TFT color liquid crystal, 100 to 240VAC
	A975GOT-TBD-B	26cm (10inch), 256 color display, TFT color liquid crystal, 24VDC
	A975GOT-TBA-EU	26cm (10inch), 256 color display, TFT color liquid crystal, 100 to 240VAC, EMC Directive and Low Voltage Directive compliant product
A970GOT	A970GOT-TBA	26cm (10inch), 16 color display, TFT color liquid crystal, 100 to 240VAC
	A970GOT-TBD	26cm (10inch), 16 color display, TFT color liquid crystal, 24VDC
	A970GOT-TBA-B	26cm (10inch), 16 color display, TFT color liquid crystal, 100 to 240VAC
	A970GOT-TBD-B	26cm (10inch), 16 color display, TFT color liquid crystal, 24VDC
	A970GOT-TBA-EU	26cm (10inch), 16 color display, TFT color liquid crystal, 100 to 240VAC, EMC Directive and Low Voltage Directive compliant product
	A970GOT-SBA	26cm (10inch), 8 color display, D-STN color liquid crystal, 100 to 240VAC
	A970GOT-SBD	26cm (10inch), 8 color display, D-STN color liquid crystal, 24VDC
	A970GOT-SBA-EU	26cm (10inch), 8 color display, D-STN color liquid crystal, 100 to 240VAC, EMC Directive and Low Voltage Directive compliant product
	A970GOT-LBA	26cm (10inch), STN monochrome liquid crystal, 100 to 240VAC
	A970GOT-LBD	26cm (10inch), STN monochrome liquid crystal, 24VDC
	A970GOT-LBA-EU	26cm (10inch), STN monochrome liquid crystal, 100 to 240VAC, EMC Directive and Low Voltage Directive compliant product
A960GOT	A960GOT-EBA	23cm (9inch), 2 color display, EL, 100 to 240VAC
	A960GOT-EBD	23cm (9inch), 2 color display, EL, 24VDC
	A960GOT-EBA-EU	23cm (9inch), 2 color display, EL, 100 to 240VAC, EMC Directive and Low Voltage Directive compliant product
Bus connection board	A9GT-QBUSS	For bus connection, small connector type (For QCPU (Q mode))
	A9GT-BUSS	For bus connection, small connector type (For A/QnA/Motion controller CPU)
Bus connection unit	A9GT-BUSSU	
Multidrop bus connection board	A9GT-QBUS2S	For multidrop bus connection, small connector type (For QCPU (Q mode))
	A9GT-BUS2S	For multidrop bus connection, small connector type (For A/QnA/Motion controller CPU)
Multidrop bus connection unit	A9GT-BUS2SU	
Serial communication board	A9GT-RS4	For Direct connection to CPU/Computer link connection/Microcomputer connection and RS-422 connection (Without clock function)
	A9GT-RS2	For Direct connection to CPU/Computer link connection/Microcomputer connection and RS-232C connection (Without clock function)
	A9GT-RS2T	For Direct connection to CPU/Computer link connection/Microcomputer connection and RS-232C connection (Incorporating clock function)
Data link unit	A7GT-J71AP23	For MELSECNET(II) optical link connection, for use as local station
	A7GT-J71AR23	For MELSECNET(II) coaxial link connection, for use as local station
	A7GT-J71AT23B	For MELSECNET/B connection, for use as local station
Network unit	A9GT-QJ71LP23	For MELSECNET/10 optical loop network connection, for use as normal station *1
	A9GT-QJ71BR13	For MELSECNET/10 coaxial bus network connection, for use as normal station *1
	A7GT-J71LP23	For MELSECNET/10 optical loop network connection, for use as normal station *1
	A7GT-J71BR13	For MELSECNET/10 coaxial bus network connection, for use as normal station *1
CC-Link communication unit	A8GT-J61BT13	For CC-Link connection, for use as intelligent device station
	A8GT-J61BT15	For CC-Link connection, for use as remote device station
Ethernet communication unit	A9GT-J71E71-T	For Ethernet connection
Protective sheet	A9GT-80PSC	Transparent protective sheet for A985GOT(-V), MITSUBISHI logotype can be removed.
	A9GT-70PSC	Transparent protective sheet for A975/970GOT, MITSUBISHI logotype can be removed.
	A9GT-60PSC	Transparent protective sheet for A960GOT, MITSUBISHI logotype can be removed.

Component	Type	Description	
Backlight	A9GT-80LLT	Backlight for A985GOT(-V) ∗2	
	A9GT-80LTTA		
	A9GT-70LTT	Backlight for A975/970GOT TFT color liquid crystal type ∗2	
	A9GT-70LTTB		
	A9GT-70LTTBW		
	A9GT-70LTS	Backlight for A970GOT D-STN color/monochrome liquid crystal type	
Debug stand	A9GT-80STAND	Debug stand for A985GOT(-V)	
	A9GT-70STAND	Debug stand for A975/970/960GOT	
Attachment	A77GT-96ATT	Attachment used for replacement from A77GOT to A960GOT	
	A87GT-96ATT	Attachment used for replacement from A870GOT to A960GOT	
	A87GT-97ATT	Attachment used for replacement from A870GOT to A975/970GOT	
External I/O interface unit	A9GT-70KBF	For external I/O equipment connection	
Video/RGB hybrid interface unit	A9GT-80V4R1	For video camera/personal computer connection	
Video input interface unit	A9GT-80V4	For video camera connection	
RGB input interface unit	A9GT-80R1	For personal computer connection	
Numeric keypad panel	A8GT-TK	Data entry Numeric Keypad Panel	
Memory board	A9GT-FNB	Exclusively used for optional OS storage (MELSEC-A/FX Ladder monitor-compatible)	
	A9GT-FNB2M	For optional function OS storage + built-in memory extension, 2M byte (MELSEC-A/FX Ladder monitor-compatible)	
	A9GT-FNB4M	For optional function OS storage + built-in memory extension, 4M byte (MELSEC-A/FX Ladder monitor-compatible)	
	A9GT-FNB8M	For optional function OS storage + built-in memory extension, 8M byte (MELSEC-A/FX Ladder monitor-compatible)	
	A9GT-QFNB	Exclusively used for optional Os storage (MELSEC-Q/QnA/A/FX Ladder monitor-compatible)	
	A9GT-QFNB4M	For optional function OS storage + built-in memory extension, 4M byte (MELSEC-Q/QnA/A/FX Ladder monitor-compatible)	
	A9GT-QFNB8M	For optional function OS storage + built-in memory extension, 8M byte (MELSEC-Q/QnA/A/FX Ladder monitor-compatible)	
PC card/ memory card	—	Commercially available SRAM type PC card (based on JEIDA Ver4.2 (based on PCMCIA2.1))	∗3 Refer to the relevant document.
	—	Commercially available flash PC card (based on Compact FlashTM) (∗ Compact FlashTM is a trademark of Sun Disk)	
	A9GTMEM-10MF	For GOT, Memory 16M byte, (hardware version D or later) flash PC card, formatted ∗4	
	A9GTMEM-20MF	For GOT, Memory 32M byte, (hardware version D or later) flash PC card, formatted ∗4	
	A9GTMEM-40MF	For GOT, Memory 64M byte, (hardware version G or later) flash PC card, formatted ∗4	
CRT display	RD15M II	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION make, 15inch, 1280 × 1024dots	∗5 Introduced products
	RD17MX	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION make, 17inch, 1280 × 1024dots	
	RDF19X	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION make, 19inch, 1600 × 1200dots	
	RD19NF	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION make, 19inch, 1600 × 1200dots	
TFT display	RDT150S	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION make, 15inch, 1280 × 768dots	
	RDT180S	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION make, 18.1inch, 1280 × 1024dots	
Bar code reader	—	Commercially available bar code reader	∗3 Refer to the relevant document.
Printer	—	Printer compliant with ESC/P24-J84 (ESC/P command compatible) ∗6 Hewlett Packard printers (PLC command compatible)	
Speech output device	—	Stereo mini-jack compatible speaker (built-in amplifier)	
Bus extension connector box	A9GT-QCNB	Used for connection of the QCPU (Q mode) long-distance bus	
Bus connector conversion box	A7GT-CNB	For conversion from large type connector to small type connector (Used for long-distance bus connection)	

Component	Type	Description	
Bus connection cable QCPU (Q mode)	QC06B	Cable length 0.6m	For connection between Q base unit and GOT For connection between GOT and GOT
	QC12B	Cable length 1.2m	
	QC30B	Cable length 3.0m	
	QC50B	Cable length 5.0m	
	QC100B	Cable length 10.0m	
	A9GT-QC150BS	Cable length 15.0m	For connection between Q base unit and GOT For connection between GOT and GOT ＊These cable are Mitsubishi Electric system Service Co., Ltd. products.
	A9GT-QC200BS	Cable length 20.0m	
	A9GT-QC250BS	Cable length 25.0m	
	A9GT-QC300BS	Cable length 30.0m	
	A9GT-QC350BS	Cable length 35.0m	
Bus connection cable	AC06B	Cable length 0.6m	For connection between large type base unit and A7GT-CNB
	AC12B	Cable length 1.2m	
	AC30B	Cable length 3.0m	
	AC50B	Cable length 5.0m	
	AC12B-R	Right angle, cable length 1.2m	
	AC30B-R	Right angle, cable length 3.0m	
	AC50B-R	Right angle, cable length 5.0m	
	A1SC07B	Cable length 0.7m	For connection between small type base unit and GOT For connection between GOT and GOT
	A1SC12B	Cable length 1.2m	
	A1SC30B	Cable length 3.0m	
	A1SC50B	Cable length 5.0m	
	A1SC05NB	Cable length 0.5m	For connection between small type base unit and A7GT-CNB
	A1SC07NB	Cable length 0.7m	
	A1SC30NB	Cable length 3.0m	
	A1SC50NB	Cable length 5.0m	
	A8GT-C12NB	Cable length 1.2m	For connection between large type base unit and GOT
	A8GT-C30NB	Cable length 3.0m	
	A8GT-C50NB	Cable length 5.0m	
	A8GT-C100EXSS	Cable length 10.0m	For connection between small type base unit/ A7GT-CNB and GOT
	A8GT-C200EXSS	Cable length 20.0m	
	A8GT-C300EXSS	Cable length 30.0m	
	A8GT-C100BS	Cable length 10.0m	For long-distance connection between GOTs
	A8GT-C200BS	Cable length 20.0m	
	A8GT-C300BS	Cable length 30.0m	
	A370C12B	Cable length 1.2m	For connection between multi-axis control and GOT
	A370C25B	Cable length 2.5m	
	A9GT-J2C10B	Cable length 1.0m	For connection between A0J2HCPU and GOT
RS-422 cable	AC30R4-25P	Cable length 3m (D-sub 25-pin at both ends)	For connection between GOT and PLC CPU For connection between GOT and serial communication module For connection between GOT and FXCPU
	AC100R4-25P	Cable length 10m (D-sub 25-pin at both ends)	
	AC300R4-25P	Cable length 30m (D-sub 25-pin at both ends)	
	—	For connection between GOT and computer link module ＊7	
RS-232C cable	QC30R2	Cable length 3m	For connection between GOT and QCPU
	AC30R2-9P	Cable length 3m (D-sub 9-pin, D-sub 25-pin)	For connection between GOT and computer link module For connection between GOT and personal computer for data transfer ＊8
	AC30R2-9SS	Cable length 3m (D-sub 9-pin at both ends)	
	AC30R2	Cable length 3m (D-sub 25-pin at both ends)	For connection between GOT and personal computer for data transfer (9-pin conversion connector required)
	AC30N2A	Cable length 3m (D-sub 25-pin at both ends)	
	—	For connecting the GOT with the power supply unit of the bar code reader ＊3	
Printer cable ＊9	AC30PIO-20P	Cable length 3m	For connection between GOT and printer
CRT cable ＊9	AC50VG	Cable length 5m	For connection between GOT and CRT
	AC300VG	Cable length 30m	
GT Designer	—	Screen creation software for GOT900 Series	
GT Designer2	—		

∗1: When using the A9GT-QJ71LP23 or A9GT-QJ71BR13, the device range (QCPU, QnACPU, ACPU) that can be monitored varies with the communication driver installed in the GOT.
When using the A7GT-QJ71LP23 or A7GT-QJ71BR13, only the AnA device range can be monitored.
For details, refer to GOT-A900 series User's Manual (Connection System Manual).

∗2: The applicable backlight varies with the GOT version (hardware version, function version).
For details, refer to Section 7.4.

∗3: Relevant document Some devices have been concluded to be applicable for GOT900 series by Mitsubishi.
For details of the devices, refer to the relevant document "List of valid devices applicable for GOT900 series"(Techinical bulletin T10-0028).
Please contact your local Mitsubishi representative for the document, if necessary.
The GOT may not operate correctly if a device other than described in the document is used.

∗4: Memory capacity differs according to the hardware versions of flash PC card.
It can be checked on the rated plate of flash card.

∗5: Introduced productsProducts which have been verified to have the specifications (standards) connectable to our modules. Use the introduced products in compliance with the specifications (standards) of the products.

∗6: The printer of ESC/P raster specifications such as the PM series cannot be connected and used with the GOT.

∗7: The RS-422 cable for use between GOT and computer link module should be fabricated by the user with reference to the GOT-A900 Series User's Manual (Connection System Manual).

∗8: The RS-232C cable may be modified by the user.
For details of cable specifications, refer to the following manuals.
• For GT Designer : GT Works Version□/GT Designer Version□ Reference Manual
• For GT Designer2: GT Designer2 Version□ Operating Manual

∗9: The printer cable and the CRT cable may be fabricated by the user.
Refer to [Chapter 3] for full information on the specifications needed to fabricate the cable.

2.3 Cautions on use of EMC command-and low voltage command-compliant products

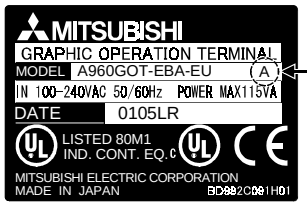
The information of the EMC Directive-compliant models is obtained from MELFANSweb homepage (http://www.nagoya.melco.co.jp/english/).

2.3.1 Cautions when using PC card/Flash PC card

Some GOT models may be incompliant with the EMC Directive when a PC card or flash PC card is used.
The following table shows if they will be compliant with the EMC Directive or not for each PC card type.
◯: Compliant with EMC Directive ×: Incompliant with EMC Directive

GOT model	PC card		
	Commercially available PC card (SRAM type)	Flash PC card (A9GTMEM-*MF)	Commercially available flash PC card
A985GOT-TBA-EU	◯	×*1	N/A
A975GOT-TBA-EU	◯	◯	◯*2
A970GOT-TBA-EU	◯	◯	◯*2
A970GOT-SBA-EU	◯	◯	◯*2
A970GOT-LBA-EU	◯	◯	◯*2
A960GOT-EBA-EU	◯	◯	◯*2

*1: This model can work as a flash PC card, although incompliant with the EMC Directive.
*2: Commercially available flash PC cards are applicable for the GOTs of function version A or later.
The GOT function version is located on the rating plate at the rear of the GOT.



2.3.2 EMC Directive-incompliant communication boards/units

The GOT is incompliant with the EMC Directive when any of the following communication boards/units is used.

Item	Type
Bus connection board	A9GT-QBUSS, A9GT-QBUS2S
Bus connection unit	A9GT-BUSSU, A9GT-BUS2SU
Data link unit	A7GT-J71AP23, A7GT-J71AR23, A7GT-J71AT23B
Network unit	A9GT-QJ71LP23, A9GT-QJ71BR13, A7GT-J71LP23, A7GT-J71BR13
CC-Link communication unit	A8GT-J61BT15
External I/O unit	A9GT-70KBF

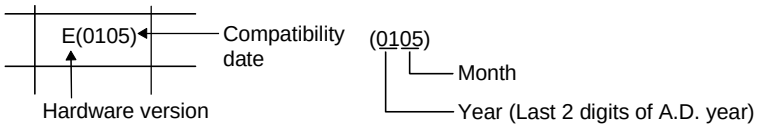
2.3.3 Connection Method

Use the following methods to connect with the GOT to ensure compliance with the EMC Directive.

Connection method		A985GOT-TBA-EU	A975GOT-TBA-EU	A970GOT-TBA-EU	A970GOT-SBA-EU	A970GOT-LBA-EU	A960GOT-EBA-EU
Bus Connection	QCPU	×	×	×	×	×	×
	QnA/ACPU	A	A	A	A	A	A
CPU direct connection	QCPU (RS-232C)	×	T(0105)	T(0105)	E(0105)	A	L(0105)
	QnA/ACPU (RS-422)	A	A	A	A	A	A
Computer link connection	RS-232C	×	T(0105)	T(0105)	E(0105)	A	L(0105)
	RS-422	×	A	A	A	A	A
MELSECNET connection		×	×	×	×	×	×
CC-Link connection	Intelligent device	×	T(0105)	T(0105)	E(0105)	A	L(0105)
	Remote device station	×	×	×	×	×	×
Ethernet connection		×	Y(0203)	Y(0203)	M(0203)	E(0203)	Q(0203)
Microcomputer connection	RS-232C	×	T(0105)	T(0105)	E(0105)	A	L(0105)
Other PLC connection	RS-232C	×	T(0105)	T(0105)	E(0105)	A	L(0105)
	RS-422C	×	A	A	A	A	A

<How to read the table>

The above table shows the GOT hardware version and compatibility date for each connection method.
(The compatibility date for hardware version A is not shown.)
Please use the recommended GOT hardware version or later.



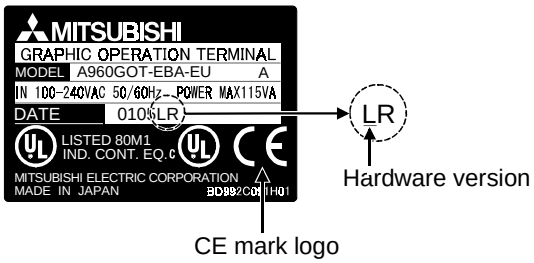
× indicates the product is incompliant with the EMC Directive.

∗1: For details about each connection method, refer to the GOT-A900 Series User's Manual (Connection System Manual).

POINT

• Hardware version

The GOT hardware version is located on the rating plate at the rear of the GOT. (The products including a CE mark logo on the rating plate and packing boxes are compliant with EMC Directive.)



• Connected devices

If connecting to the PLC or microcomputer other than Mitsubishi products (MELSEC-Q series, MELSEC-QnA series or MELSEC-A series) please refer to the EMC Directive compliance manual for that specific device.

2.3.4 When the communication unit/board is used

Use the following communication boards/units with the GOT to ensure compliance with the EMC Directive. (Available October, 2003).
The GOT does not comply with the EMC Directive when connected with other than followings.

Connection format		Communication unit/board
Bus connection		A9GT-BUSS (Hardware version C or later) A9GT-BUS2S (Hardware version C or later)
CPU direct connection	RS-232C communication	A9GT-RS2 (Hardware version B or later) A9GT-RS2T (Hardware version C or later)
	RS-422 communication	A9GT-RS4 (Hardware version B or later)
Computer link connection	RS-232C communication	A9GT-RS2 (Hardware version B or later) A9GT-RS2T (Hardware version C or later)
	RS-422 communication	A9GT-RS4 (Hardware version B or later)
CC-Link connection		A8GT-J61BT13 (Hardware version E or later)
Ethernet connection		A9GT-J71E71-T (Hardware version C or later)
Microcomputer connection	RS-232C communication	A9GT-RS2 (Hardware version B or later) A9GT-RS2T (Hardware version C or later)
Other PLC connection	RS-232C communication	A9GT-RS2 (Hardware version B or later) A9GT-RS2T (Hardware version C or later)
	RS-422 communication	A9GT-RS4 (Hardware version B or later)

2.3.5 About the Cable Used

If making the GOT applicable to the EMC directive, be sure to use the cables shown below.

○: Compliant with EMC directive ×: In compliant with EMC directive

Connection method		Cable	EMC Directive
Bus connection	A/QnACPU	AC06/12/30/50B, AC12/30/50B-R, A1SC07/12/30/50B, A1SC05/07/30/50NB, A8GT-C12/30/50NB, A370C12/25B, A9GT-J2C10B, A8GT-C100/200/300EXSS, A8GT-C100/200/300BS	○
	QCPU (Q mode)	QC06/12/30/50/100B, A9GT-QC150/200/250/300/350BS	×
CPU direct connection	RS-232C communication	QC30R2	○
	RS-422 communication	AC30/100/300R4-25P	○
Computer link connection	RS-232C communication	User created cable	○
	RS-422 communication	AC30/100/300R4-25P, User created cable	○
CC-Link connection		CC-Link dedicated cable.	○
Ethernet connection		Category 5 Twisted pair shielded cable. (10 BASE-T)	○
Microcomputer connection	RS-232C communication	User created cable	○
Other PLC connection	RS-232C communication	User created cable	○
	RS-422 communication		

POINT

• Modify the cables (including user-produced cable) to ensure compliance with the EMC Directive.
For details, refer to Section 5.3.2.

2.4 Software packages to be used

When a GOT is used, a software package of the applicable version or later is required.
The versions of the software packages required for each GOT are shown below.
(GT Works2 and GT Designer2 are supported from the first version (Version 1.00A).)

Type	Compatible software package
A985GOT-TBA-V, A985GOT-TBD-V	SW5D5C-GTWORKS-E Version F or later, SW5D5C-GOTR-PACKE Version F or later
A985GOT-TBA (-EU), A985GOT-TBD	SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version C or later
A975GOT-TBA (-B) (-EU), A975GOT-TBD (-B)	SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version A or later (The brightness of the high density model can be adjusted in increments of 8 steps for version C or later.)
A970GOT-TBA (-B) (-EU), A970GOT-TBD (-B)	
A970GOT-LBA, A970GOT-LBD	SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version J or later
A970GOT-SBA (-EU), A970GOT-SBD	SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version A or later
A960GOT-EBA (-EU), A960GOT-EBA	

2.5 Unusable Conventional Products

The following conventional products cannot be used with this GOT.

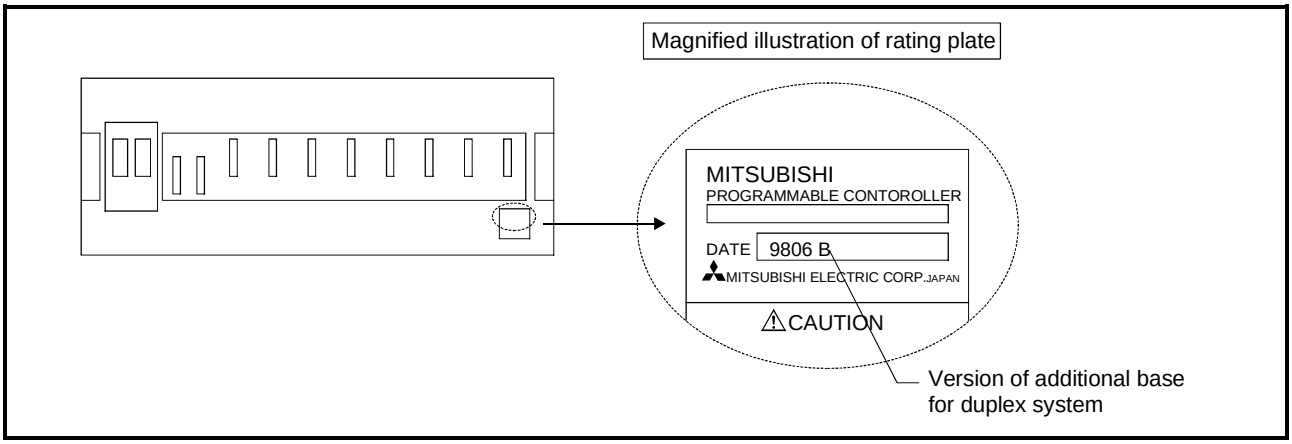
Component	Type
Bus connection unit	A7GT-BUS, A7GT-BUS2, A7GT-BUSS, A7GT-BUS2S
Serial communication unit	A8GT-RS4, A8GT-RS2
Backlight	A8GT-70LTS, A8GT-70LTT, A8GT-50LT
Ladder monitoring cassette	A8GT-MCAM
Extension memory cassette	A8GT-MCA1MFDW, A8GT-MCA2MFDW, A8GT-MCA3MFDW
Protective sheet	A8GT-70PSCE, A8GT-70PSNE, A8GT-70PSCS, A8GT-70PSNS, A8GT-50PSC, A8GT-50PSN
Printer unit	A8GT-70PRF, A8GT-50PRF
External I/O interface unit	A8GT-70KBF, A8GT-50KBF
Debug stand	A8GT-70STAND, A8GT-50STAND
Option unit mounting fixture	A8GT-50STE

2.6 Notes on Q4ARCPU Duplex System

This section describes the notes on the connecting of the Q4ARCPU with the GOT, as follows:

(1) Notes on the additional base for duplex system at the final stage:
To connect the duplex system with the GOT via the bus, connect the GOT with the additional base for duplex system (A68RB) that is provided at the final stage of the duplex system. To use the additional base for duplex system, please apply that of the Version B or after.

- In the following configurations the GOT will not operate normally as specified.
  (a) The configuration in which the GOT is connected with the fundamental base for the duplex system (A32RB, A33RB) is connected via the bus.
  (b) The configuration in which the GOT is connected with the additional base (A68RB) for duplex system of Version A is connected via the bus.
- To check and confirm the version of the additional base for duplex system, please refer to the DATE column on the rating plate that is adhered to the part as shown in the illustration below.



(2) Notes on 5V DC supply for the additional base (A68RB) for duplex system at the final stage:

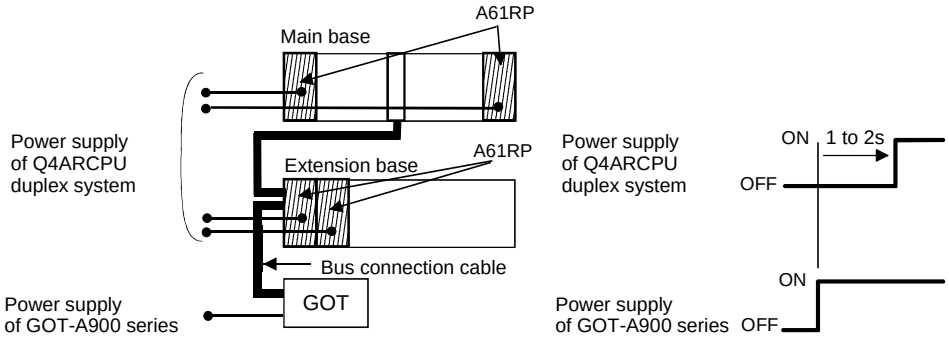
220mA of current to be consumed will be supplied from the additional base for duplex system at the final stage to the GOT bus interface, if the GOT power supply is off and the power supply for the power supply module mounted on the additional base for duplex system at the final stage is on. Therefore, please make sure that the 5V DC consumption (8A) of the power supply module will not be exceeded by the sum of the value of the current consumption of the input/output module and special function module that are mounted on the additional base for duplex system at the final stage and the value of the current consumption (220mA) of the GOT bus interface.

POINT

Power on the GOT-A900 series and Q4ARCPU duplex system in the following order.

(1) Power on the GOT-A900 series.

(2) 1 to 2 seconds after power-on of the GOT-A900 series, power on the Q4ARCPU duplex system.



It is recommended to switch power on with an external circuit configured.

If power is not switched on in the order as specified in the restriction, the Q4ARCPU duplex system will not start up in system A but will start up in system B before it starts control.

3 PERFORMANCE

3.1 General Specifications

The general specifications of the GOT are indicated below.

Item	Specifications					
Operating ambient temperature	Display section	0 to 40°C ＊1				
	Other than display section	0 to 55°C				
Storage ambient temperature	-20 to 60°C					
Operating ambient humidity	10 to 90 % RH, non-condensing					
Storage ambient humidity	10 to 90 % RH, non-condensing					
Vibration resistance	Conforms to JIS B3501 and IEC 61131-2		Frequency	Acceleration	Amplitude	Sweep Count
		Under intermittent vibration	10 to 57 Hz	—	0.075 mm	10 times each in X, Y and Z directions (for 80 minutes)
			57 to 150 Hz	9.8 m/s^2	—	
		Under continuous vibration	10 to 57 Hz	—	0.035 mm	
			57 to 150 Hz	4.9 m/s^2	—	
Shock resistance	Conforms to JIS B3501, IEC 61131-2 (147 m/s^2, 3 times each in X, Y and Z directions)					
Operating atmosphere	No corrosive gas					
Operating altitude ＊4	2000 m (6562 ft) max.					
Installation location	Inside control panel					
Overvoltage category ＊2	II or less					
Pollution degree ＊3	2 or less					

＊1: For A975GOT-TBA/TBD (-B) and A970GOT-TBA/TBD (-B), it becomes 0 to 55°C.

＊2: This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the raged voltage of 300 V is 2500 V.

＊3: This index indicates the degree to which conductive material is generated in the environment where the equipment is used.
In pollution degree 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensation.

＊4: Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0m (0ft.).
Failure to observe this instruction may cause a malfunction.

3.2 Performance specifications

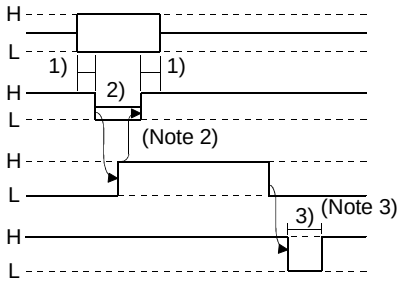
3.2.1 Performance specifications of the A985GOT(-V)

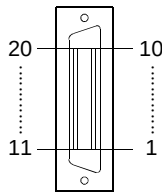
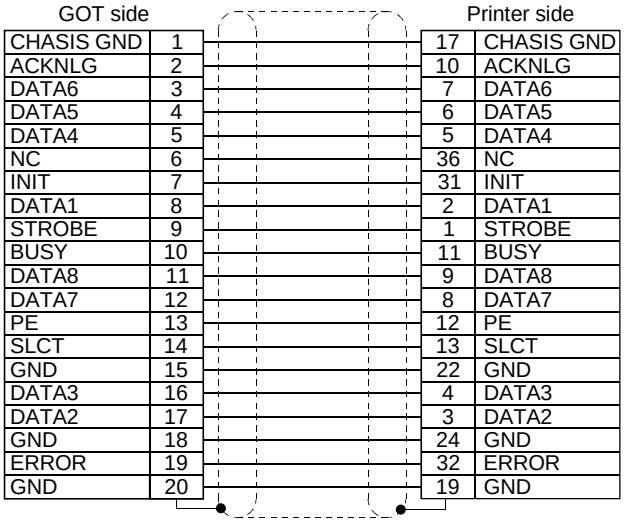
Item		Specifications	
		A985GOT-TBA-V, A985GOT-TBD-V	A985GOT-TBA, A985GOT-TBD, A985GOT-TBA-EU
Display section	Type	High-luminance TFT color liquid crystal (Brightness: 350 cd/m^2 (brightness of LC itself))	
	Resolution	800 × 600 dots	
	Display size	246 (9.69) (W) × 184.5 (7.26) (H) mm (inch)	
	Display color	256 color	
	Image display color	65536 color	—
	Intensity	350cd/ m^2 (Average intensity of liquid crystal only)	
	Display angle	60 degrees (right and left), 40 degrees (up), 50 degrees (down)	
Backlight		Cold cathode fluorescent tube backlight (Backlight OFF / Screen saving time / Operator detect sensor setting allowed)	
Touch panel	Number of touch keys	1900 points (38 lines × 50 columns)	
	Key size	Minimum 16 × 16 dots (per key) (8 × 16 dots only for bottom line)	
	Repeat function	No	
Human sensor	Detection length	1 (39.37) m (inch)	
	Detection range	80° in both horizontal and vertical directions	
	Detection delay time	0 to 4 s	
Memory ＊1	Type	Flash ROM	
	Application	For monitor screen data storage, for OS storage	
	Capacity	1M byte built-in (user area), max. 8M bytes increasable	
Communication board slot ＊2		For communication board loading, 1 slot	
Communication unit interface ＊2		For communication unit loading, 1 channel	
Option unit interface		For video/RGB hybrid interface unit, video input interface unit, RGB input interface unit loading, 1 channel	For External I/O interface unit loading, 1 channel
PC card interface		For PC card loading, 1 channel	
Memory board slot		For memory board loading, 1 slot	
RS-232C interface		For connection of personal computer, for bar-code reader connection, 1 channel	
Printer interface ＊3		For printer connection, 1 channel	
CRT interface ＊4		—	For CRT connection, SVGA 1 channel
Speech output terminal		For external speaker connection (3W + 3W or higher recommended) (stereo mini-jack), 1 channel each for L/R (2Vp-p, 0.4mW (for rated load 10kΩ)), replayable speech file: Windows WAV format, 8.000kHz, 16-bit monaural (8 s/speech file)	
Buzzer output		Single tone (tone length adjustable)	
Life ＊5	Display section ＊6 ＊7	50,000 h (Operating ambient temperature: 25°C)	
	Backlight ＊6 ＊9	40,000 to 50,000 h (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
	Touch key	1 million times or more (operating force 0.98N max.)	
	Built-in memory	Number of write times: 100,000 times	
Environmental protective structure	Equivalent to IP65f (front section)	Hardware Version A or later	
	Equivalent to IP65f/IP67f/NEMA 4 (front section)	—	Hardware Version G (May, 2001) or later (-EU only)
External dimensions		312 (12.28) (W) × 238 (9.37) (H) × 49 (1.93) (D) mm (inch)	
Panel cutting dimensions		302 (11.89) (W) × 228 (8.98) (H) mm (inch)	
Weight		2.4 (5.3) kg (lb)	
Compatible software package ＊8		SW5D5C-GTWORKS-E Version F or later SW5D5C-GOTR-PACKE Version F or later	SW0D5C-GTWORKS-E Version A or later SW1D5C-GOTRE-PACK Version C or later

＊1: The built-in memory is ROM which allows old data to be overwritten by new data. (Data backup power supply is not needed.)

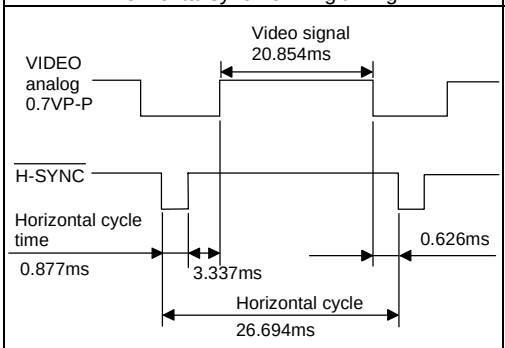
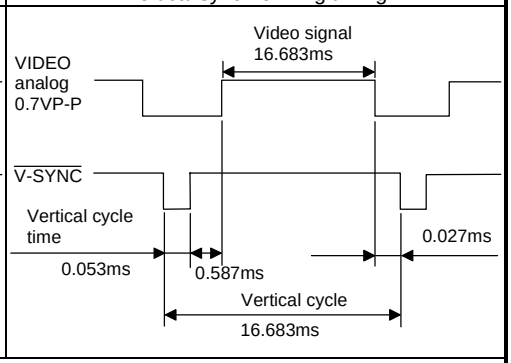
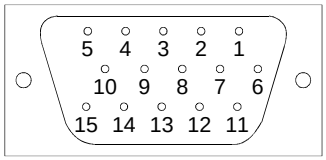
＊2: Note that either of the communication board slot and communication unit interface may only be used.

∗3 The following specifications are those of the printer interface.
When fabricating the printer cable on the user side, conform to the following specifications.

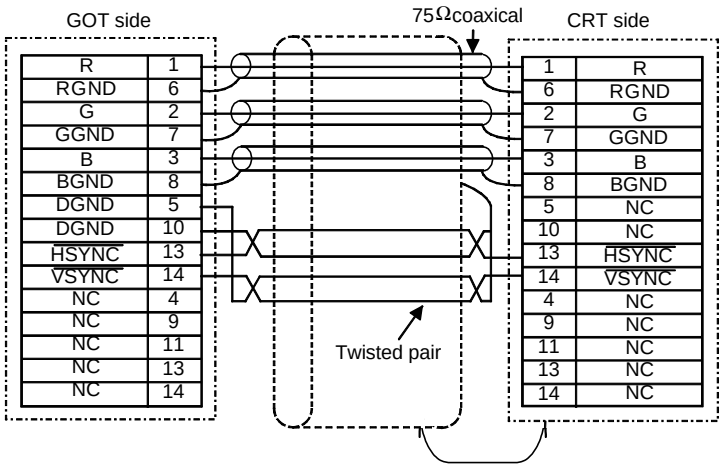
<table>
<tr><td colspan="2">Item</td><td colspan="9">Specifications</td></tr>
<tr><td colspan="2">Compliant Standard</td><td colspan="9">Centronics (See below for the data and control signal timing.)</td></tr>
<tr><td colspan="2">Insulation system</td><td colspan="9">Photocoupler insulation</td></tr>
<tr><td rowspan="2">Signal level</td><td>Input</td><td colspan="9">V_{1H} = 2V, V_{1L} = 0.8V</td></tr>
<tr><td>Output</td><td colspan="9">V_{0H} = 2.4V, V_{0L} = 0.5V</td></tr>
<tr><td colspan="2">Max. cable length</td><td colspan="9">Within 3m or within the specifications of the printer used</td></tr>
<tr><td colspan="2">Timing chart</td><td colspan="9">DATA1 to 8
(sending side → receiving side)
$\overline{\text{STROBE}}$
(sending side → receiving side)
$\overline{\text{BUSY}}$
(sending side ← receiving side)
$\overline{\text{ACKNLG}}$
(sending side ← receiving side)
 

(Note 1) 1) Minimum 1.0µs
2) Minimum 1.0µs, maximum 500 3) Minimum 2µs
(Note 2) BUSY rises after fall of $\overline{\text{STROBE}}$.
(Note 3) $\overline{\text{ACKNLG}}$ is sent within 10µs after fall of BUSY.</td></tr>
<tr><td rowspan="2">Connector used
(GOT connector)</td><td>Type</td><td colspan="9">GOT connector : 10220-52A2JL
Cable connector : 10120-6000EL(insulation displacement type connector) Sumitomo 3M make
Cable connector cover : 10320-3210-000</td></tr>
<tr><td>Pin-outs</td><td colspan="9"> 
<table>
<tr><td>No.</td><td>Signal</td><td>No.</td><td>Signal</td><td>No.</td><td>Signal</td><td>No.</td><td>Signal</td></tr>
<tr><td>1</td><td>CHASIS GND</td><td>6</td><td>NC</td><td>11</td><td>DATA8</td><td>16</td><td>DATA3</td></tr>
<tr><td>2</td><td>ACKNLG</td><td>7</td><td>INIT</td><td>12</td><td>DATA7</td><td>17</td><td>DATA2</td></tr>
<tr><td>3</td><td>DATA6</td><td>8</td><td>DATA1</td><td>13</td><td>PE</td><td>18</td><td>GND</td></tr>
<tr><td>4</td><td>DATA5</td><td>9</td><td>STROBE</td><td>14</td><td>SLCT</td><td>19</td><td>ERROR</td></tr>
<tr><td>5</td><td>DATA4</td><td>10</td><td>BUSY</td><td>15</td><td>GND</td><td>20</td><td>GND</td></tr>
</table></td></tr>
<tr><td colspan="2">Wiring diagram</td><td colspan="9"> 
<table>
<tr><td colspan="2">GOT side</td><td colspan="2">Printer side</td></tr>
<tr><td>CHASIS GND</td><td>1</td><td>17</td><td>CHASIS GND</td></tr>
<tr><td>ACKNLG</td><td>2</td><td>10</td><td>ACKNLG</td></tr>
<tr><td>DATA6</td><td>3</td><td>7</td><td>DATA6</td></tr>
<tr><td>DATA5</td><td>4</td><td>6</td><td>DATA5</td></tr>
<tr><td>DATA4</td><td>5</td><td>5</td><td>DATA4</td></tr>
<tr><td>NC</td><td>6</td><td>36</td><td>NC</td></tr>
<tr><td>INIT</td><td>7</td><td>31</td><td>INIT</td></tr>
<tr><td>DATA1</td><td>8</td><td>2</td><td>DATA1</td></tr>
<tr><td>STROBE</td><td>9</td><td>1</td><td>STROBE</td></tr>
<tr><td>BUSY</td><td>10</td><td>11</td><td>BUSY</td></tr>
<tr><td>DATA8</td><td>11</td><td>9</td><td>DATA8</td></tr>
<tr><td>DATA7</td><td>12</td><td>8</td><td>DATA7</td></tr>
<tr><td>PE</td><td>13</td><td>12</td><td>PE</td></tr>
<tr><td>SLCT</td><td>14</td><td>13</td><td>SLCT</td></tr>
<tr><td>GND</td><td>15</td><td>22</td><td>GND</td></tr>
<tr><td>DATA3</td><td>16</td><td>4</td><td>DATA3</td></tr>
<tr><td>DATA2</td><td>17</td><td>3</td><td>DATA2</td></tr>
<tr><td>GND</td><td>18</td><td>24</td><td>GND</td></tr>
<tr><td>ERROR</td><td>19</td><td>32</td><td>ERROR</td></tr>
<tr><td>GND</td><td>20</td><td>19</td><td>GND</td></tr>
</table></td></tr>
</table>

∗4: The following specifications are those of the CRT interface.
When fabricating the CRT cable on the user side, conform to the following specifications.
For the CRT side connector, refer to the instruction manual of the CRT used.

<table>
<tr><td colspan="2">Item</td><td colspan="8">Specifications</td></tr>
<tr><td colspan="2">Processing method</td><td colspan="8">Analog RGB video signals</td></tr>
<tr><td colspan="2">Screen display</td><td colspan="8">100 characters × 75 lines</td></tr>
<tr><td colspan="2">Display color</td><td colspan="8">256</td></tr>
<tr><td colspan="2">Max. cable length</td><td colspan="8">30m</td></tr>
<tr><td colspan="2">Dot clock</td><td colspan="8">38.362MHz</td></tr>
<tr><td colspan="2">Horizontal scanning frequency</td><td colspan="8">37.461kHz</td></tr>
<tr><td colspan="2">Vertical scanning frequency</td><td colspan="8">60Hz</td></tr>
<tr><td colspan="2" rowspan="2">Timing chart</td><td colspan="4">Horizontal synchronizing timing</td><td colspan="4">Vertical synchronizing timing</td></tr>
<tr><td colspan="4"> 
</td><td colspan="4"> 
</td></tr>
<tr><td rowspan="11">Connector used</td><td>Type</td><td colspan="8">15-pin shrink D-sub (female) screw fixing type (DDK make 17HE-R13150-73MC2)</td></tr>
<tr><td rowspan="10">Pin-outs</td><td colspan="8"> 
</td></tr>
<tr><td>No.</td><td colspan="2">Signal name</td><td>Direction of signal GOT ↔ CRT</td><td>No.</td><td colspan="2">Signal name</td><td>Direction of signal GOT ↔ CRT</td></tr>
<tr><td>1</td><td>Analog R (red)</td><td>R</td><td>→</td><td>9</td><td>—</td><td>NC</td><td>—</td></tr>
<tr><td>2</td><td>Analog G (green)</td><td>G</td><td>→</td><td>10</td><td>Digital GNB</td><td>DGND</td><td>—</td></tr>
<tr><td>3</td><td>Analog B (blue)</td><td>B</td><td>→</td><td>11</td><td>—</td><td>NC</td><td>—</td></tr>
<tr><td>4</td><td>—</td><td>NC</td><td>—</td><td>12</td><td>—</td><td>NC</td><td>—</td></tr>
<tr><td>5</td><td>Digital GNB</td><td>DGND</td><td>—</td><td>13</td><td>Horizontal synchronizing signal</td><td>HSYNC</td><td>→</td></tr>
<tr><td>6</td><td>Return R (red)</td><td>RGND</td><td>←</td><td>14</td><td>Vertical synchronizing signal</td><td>VSYNC</td><td>→</td></tr>
<tr><td>7</td><td>Return G (green)</td><td>GGND</td><td>←</td><td>15</td><td>—</td><td></td><td></td></tr>
<tr><td>8</td><td>Return B (blue)</td><td>BGND</td><td>←</td><td>-</td><td>—</td><td></td><td></td></tr>
</table>

The wiring method used when the CRT is connected is shown below.

Item	Specifications
Wiring diagram	

∗5: When parts must be changed, consult your sales representative.

∗6: The screen saving/back light OFF function of GOT is provide to prevent images from becoming permanently etched on the display and extend the back light life.

∗7: Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements.
Please note that these dots appear due to its characteristic and are not caused by product defect.

∗8: GT Works2 and GT Designer2 are supported from the first version (Version1.00A).

∗9: Specifications change depending on the GOT function version.
For specification differences, refer to the following specifications different for each GOT version.

Specifications different for each GOT version

The GOT-A900 series differs in specifications according to the function version.
The specifications different for each GOT-A900 series version are indicated below.

Life

Specifications are different in the display section or life according to the GOT function version.
For checking GOT function version, refer to Section 7.4.

Relevant models

- A985GOT-TBA-V
- A985GOT-TBD-V
- A985GOT-TBA
- A985GOT-TBD

Item		Specifications	
		No function version, Function version A	Function version B (June, 2004) or later
Life	Backlight	40,000h	50,000h
		(Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	

3.2.2 Performance specifications of the A975GOT/A970GOT/A960GOT

Item		Specifications				
		A975GOT-TBA-B A975GOT-TBD-B A975GOT-TBA-EU	A970GOT-TBA-B A970GOT-TBD-B A970GOT-TBA-EU	A970GOT-SBA A970GOT-SBD A970GOT-SBA-EU	A970GOT-LBA A970GOT-LBD A970GOT-LBA-EU	A960GOT-EBA A960GOT-EBD A960GOT-EBA-EU
Display section	Type	TFT color liquid crystal		D-STN color liquid crystal	STN monochrome liquid crystal	EL
	Resolution	640 × 480 dots				640 × 400 dots
	Display size	211 (8.31) × 158 (6.23) mm (inch)				192 (7.57) × 120 (4.73) mm (inch)
	Display color	256 color	16 color	8 color	2 color (monochrome)	2 color (yellow orange, black)
	Intensity ＊1	-B : 380 cd/m^2 -EU: 350 cd/m^2 (Average intensity of liquid crystal only)		250 cd/m^2 (Average intensity of liquid crystal only)		—
	Display angle ＊1	-B : 85 degrees (right, left, up and down) -EU: 50 degrees (right and left), 40 degrees (up), 45 degrees (down)		50 degrees (right and left), 45 degrees (up), 30 degrees (down)		—
Backlight		Cold cathode fluorescent tube backlight (Backlight OFF/screen saving time setting allowed)				—
Touch panel	Number of touch keys	1200 points (30 lines × 40 columns)				1000 points (25 lines × 40 columns)
	Key size	Minimum 16 × 16 dots (per key)				
	Repeat function	No				
Memory ＊2	Type	Flash ROM				
	Application	For monitor screen data storage, for OS storage				
	Capacity	1M byte built-in (user area), max. 8M bytes increasable				
Communication board slot ＊3		For communication board loading, 1 slot				
Communication unit interface ＊3		For communication unit loading, 1 channel				
Option unit interface		For option unit loading, 1 channel				
PC card interface		For PC card loading, 1 channel				
Memory board slot		For memory board loading, 1 slot				
RS-232C interface		For connection of personal computer for graphics software, for bar-code reader connection, 1 channel				
Printer interface ＊4		For parallel printer connection, 1 channel				
Speech output terminal		For external speaker connection (3W + 3W or higher recommended) (stereo mini-jack), 1 channel each for L/R (2Vp-p, 0.4mW (for rated load 10kΩ)), compatible speech file: Windows WAV format, 8.000kHz, 16-bit monaural (8 s/speech file)				
Buzzer output		Single tone (tone length adjustable)				
Life ＊5	Display section ＊1 ＊6 ＊7	-B : 43,000h -EU: 41,000h (Operating ambient temperature : 25°C)		50,000h (Operating ambient temperature : 25°C)		30,000h (Initial luminance 70%, 25°C)
	Backlight ＊1 ＊7	-B : 43,000h -EU: 40,000h		40,000h		—
		(Time when display luminance reaches 50% at the operating ambient temperature of 25°C)				
	Touch key	1 million times or more (operating force 0.98N max.)				
	Built-in memory	Number of write times: 100,000 times				
Environmental protective structure ＊1		Equivalent to IP65f (front section) (-EU is equivalent to IP65f/IP67f/NEMA4 (front section))			Equivalent to IP65f (front section)	Equivalent to IP65f (front section) (-EU is equivalent to IP65f/IP67f/NEMA4 (front section))
Outline dimensions		297 (11.7) (W) × 208 (8.2) (H) × 46 (1.81) (D) mm (inch)				268 (10.56) (W) × 192 (7.56) (H) × 49 (1.93) (D)mm (inch)
Panel cutting dimensions		289 (11.39) (W) × 200 (7.88) (H) mm (inch)				258 (10.17) (W) × 183 (7.21) (H) (inch)
Weight		1.8 (4.0) kg (lb)		1.9 (4.2) kg (lb)		1.6 (3.5) kg (lb)
Compatible software package ＊8		SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version A or later (8-step intensity adjustment is available from version C or later.)		SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version A or later	SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version J or later	SW0D5C-GTWORK-E Version A or later, SW1D5C-GOTRE-PACK Version A or later

＊1: Display specifications vary with the GOT version (hardware version, function version). For details, refer to the Section 3.2.2. (1) in the following page.

＊2: The built-in memory is ROM which allows old data to be overwritten by new data. (Data backup power supply is not needed.)

＊3: Note that either of the communication board slot and communication unit interface may only be used.

∗4: Refer to the [3.2.1] for details on the specifications are those of the printer interface.
∗5: When parts must be changed, consult your sales representative.
∗6: The screen saving/back light OFF function of GOT is provide to prevent images from becoming permanently etched on the display and extend the back light life.
∗7: Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements.
Please note that these dots appear due to its characteristic and are not caused by product defect.
∗8: GT Works2 and GT Designer2 are supported from the first version (Version1.00A).
∗9: Performance specifications of A975GOT-TBA/TBD and A970GOT-TBA/TBD are given in Appendix 4.1.

(1) Specifications different for each GOT version

GOT-A900 series specifications are different according to the GOT version (hardware version, function version.).
Details are given below.

(a) Display section, Life

Specifications are different in the display section or life according to the GOT function version.
For checking GOT function version, refer to Section 7.4.

Relevant models

- A975GOT-TBA-B
- A975GOT-TBD-B
- A970GOT-TBA-B
- A970GOT-TBD-B

Item		Specifications		
		No function version	Function version A	Function version B (January, 2004) or later
Display section	Intensity	350 cd/m^2 (Average intensity of liquid crystal only)		380 cd/m^2 (Average intensity of liquid crystal only)
	Display angle	50 degrees (right and left), 40 degrees (up), 45 degrees (down)		85 degrees (right, left, up and down)
Life	Display section	41,000h (Operating ambient temperature: 25°C)		43,000h (Operating ambient temperature: 25°C)
	Backlight	40,000h (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)		43,000h

(b) Environmental protective structure

The compliant environmental protective structure is different according to the GOT function version.
For checking GOT function version, refer to Section 7.4.

Relevant models

- A975GOT-TBA-EU
- A970GOT-TBA-EU
- A970GOT-SBA-EU
- A970GOT-LBA-EU
- A960GOT-EBA-EU

Item		Specifications				
		A975GOT-TBA-EU	A970GOT-TBA-EU	A970GOT-SBA-EU	A970GOT-LBA-EU	A960GOT-EBA-EU
Environmental protective structure	Equivalent to IP65f (front section)	Hardware version A or later				
	Equivalent to IP65f/IP67f/NEMA4 (front section)	Hardware version T (May, 2001) or later		Hardware version E (May, 2001) or later	—	Hardware version L (May, 2001) or later

3.2.3 Power supply specifications

Item			Specifications		
			A985GOT-TBA-V	A985GOT-TBA(-EU), A975GOT-TBA(-B)(-EU), A970GOT-TBA(-B)(-EU), A970GOT-SBA(-EU), A970GOT-LBA(-EU), A960GOT-EBA(-EU)	A985GOT-TBD (-V), A975GOT-TBD(-B), A970GOT-TBD(-B), A970GOT-SBD, A970GOT-LBD, A960GOT-EBD
Input power supply voltage			AC100 to 240V (+10, −15)		24VDC (+25%, −20%)
Input frequency			50/60Hz ± 3Hz		—
Input max. apparent power			For 100VAC input When communication board is used: 59VA or less When communication module is used: 69VA or less ＊1 For 200VAC input When communication board is used: 74VA or less When communication module is used: 86VA or less ＊1	For 100VAC input When communication board is used: 50VA or less When communication module is used: 60VA or less ＊1 For 200VAC input When communication board is used: 63VA or less When communication module is used: 75VA or less ＊1	—
Input max. power			—		40W
Inrush current			40A max. (264VAC, max. load)		61A max. (30VDC, max. load)
Permissible instantaneous power failure time			20ms (100VAC or more)		1ms
Noise immunity			By noise simulator of 1,500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency
Dielectric withstand voltage			1500VAC for 1 minute across AC external terminals and earth (2830VAC for 1 second for EU)		500VAC for 1 minute across DC external terminals and earth
Insulation resistance			10MΩ or larger by insulation resistance tester		
External output			Transistor output, 2 points (RUN, OUTPUT)		
	Insulation system		Photocoupler insulation		
	Rated load voltage		12/24VDC		
	Operating load voltage range		10.2 to 30VDC (Peak voltage 30V)		
	Max. load current		0.1A/point, 0.2A/common		
	Max. inrush current		0.4A, 10ms max.		
	OFF-time leakage current		0.1mA max.		
	ON-time max. voltage drop		1.0VDC (TYP.) 0.1A, 2.5VDC (MAX.) 0.1A		
	Response time	OFF → ON	10ms max. (resistive load)		
		ON → OFF	10ms max. (resistive load)		
	Surge suppressor		Zener diode		
Applicable wire size			0.75 to 2mm^2		
Applicable solderless terminal			RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A		
Applicable tightening torque (Terminal block terminal screw)			59 to 88N·cm		

＊1: When the communication module for bus connection (A9GT-BUSSU/A9GT-BUS2SU/A9GT-QBUS2SU) is used, the maximum input apparent power is the same as when the communication board is used.

Remarks

- If an instantaneous power failure occurs in the power supply and continues for more than the permissible period, the GOT will be reset.
- Make sure to power on the unit more than 1 minute after power-off.

3.3 Power Supply Power Consumed when Communication Board or Communication Unit Is Fitted

3.3.1 GOT with AC type input power supply

When the communication board or communication unit is fitted to the GOT whose input power supply is AC type, power consumption is as listed below.

Communication Type	Input Voltage	Power Consumption (Apparent Power)					
		A985GOT-TBA-V	A985GOT-TBA A985GOT-TBA-EU	A975GOT-TBA A975GOT-TBA-B A975GOT-TBA-EU	A970GOT-TBA A970GOT-TBA-B A970GOT-TBA-EU	A970GOT-SBA A970GOT-SBA-EU A970GOT-LBA A970GOT-LBA-EU	A960GOT-EBA A960GOT-EBA-EU
Communication unit	100VAC	59VA or less	50VA or less				
	200VAC	74VA or less	63VA or less				
Communication board ＊1	100VAC	69VA or less	60VA or less				
	200VAC	86VA or less	75VA or less				

＊1: When the communication module for bus connection (A9GT-BUSSU/A9GT-BUS2SU/A9GT-QBUS2SU) is used, the maximum input apparent power is the same as when the communication board is used.

3.3.2 GOT with DC type input power supply

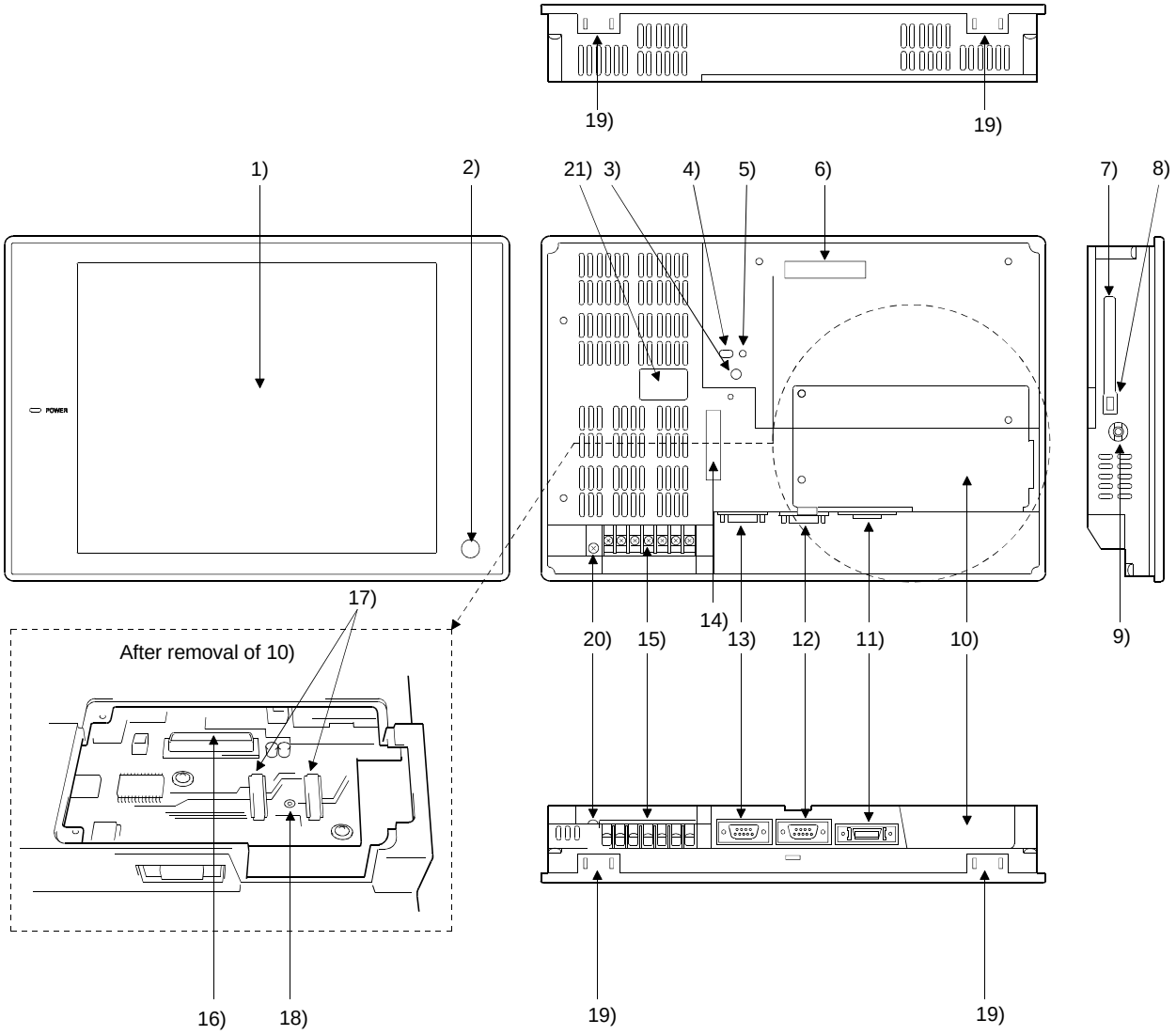
When the communication board or communication unit is fitted to the GOT whose input power supply is DC type, power consumption is as listed below.

Communication Type	Input Voltage	Power Consumption (Apparent Power)					
		A985GOT-TBA-V	A985GOT-TBD	A975GOT-TBD A975GOT-TBD-B	A970GOT-TBD A970GOT-TBD-B	A970GOT-SBD A970GOT-LBD	A960GOT-EBD
Communication unit	19.2 to 30VDC	31W or less	26W or less	20W or less		17W or less	20W or less
Communication board ＊1	19.2 to 30VDC	37W or less	32W or less	26W or less		22W or less	24W or less

＊1: When the communication module for bus connection (A9GT-BUSSU/A9GT-BUS2SU/A9GT-QBUS2SU) is used, the maximum input apparent power is the same as when the communication board is used.

4 PART NAMES AND SETTINGS

4.1 Part Names And Settings of the A985GOT(-V)



Number	Name	Description
1)	Display section	Shows the screen
2)	Operator detect sensor	Sensor that detects operators
3)	Reset button	Used to reset the hardware of the GOT
4)	memory card access switch	Used to set the condition of access to the PC card when it is loaded during power-on (Factory-set to OFF) OFF • • • Access from GOT to PC card inhibited ON • • • • Access from GOT to PC card enabled
5)	memory card LED	Indicates whether the PC card may be loaded/unloaded or not OFF • • • PC card may be loaded/unloaded (When switch 4 is OFF) ON • • • • PC card must not be loaded/unloaded (When switch 4 is ON)
6)	Communication unit interface	Interface for loading the communication unit
7)	memory card interface	Interface for loading the PC card
8)	memory card ejection button	Button used to withdraw the PC card

Number	Name	Description
9)	Speech output terminal	For external speaker connection
10)	Slot cover	Fixture to cover the slot
11)	Printer interface	For printer connection
12)	CRT interface (for A985GOT only)	For CRT connection
	RS-232C interface (for A985GOT-V only)	For connection of personal computer and bar code reader
13)	RS-232C interface (for A985GOT only)	
14)	Option unit interface	For option unit loading (for future extension)
15)	Terminal block	For power input and external output
16)	Communication board slot	Slot for communication board loading
17)	Memory board slot	Slot for memory board loading
18)	Screw hole for attaching memory board	Screw hole used to attach the memory board
19)	Mounting fixture fitting portion	For mounting fixture fitting
20)	Protective ground terminal	For earthing (For safety, please make sure to ground this terminal.)
21)	Rating plate	—

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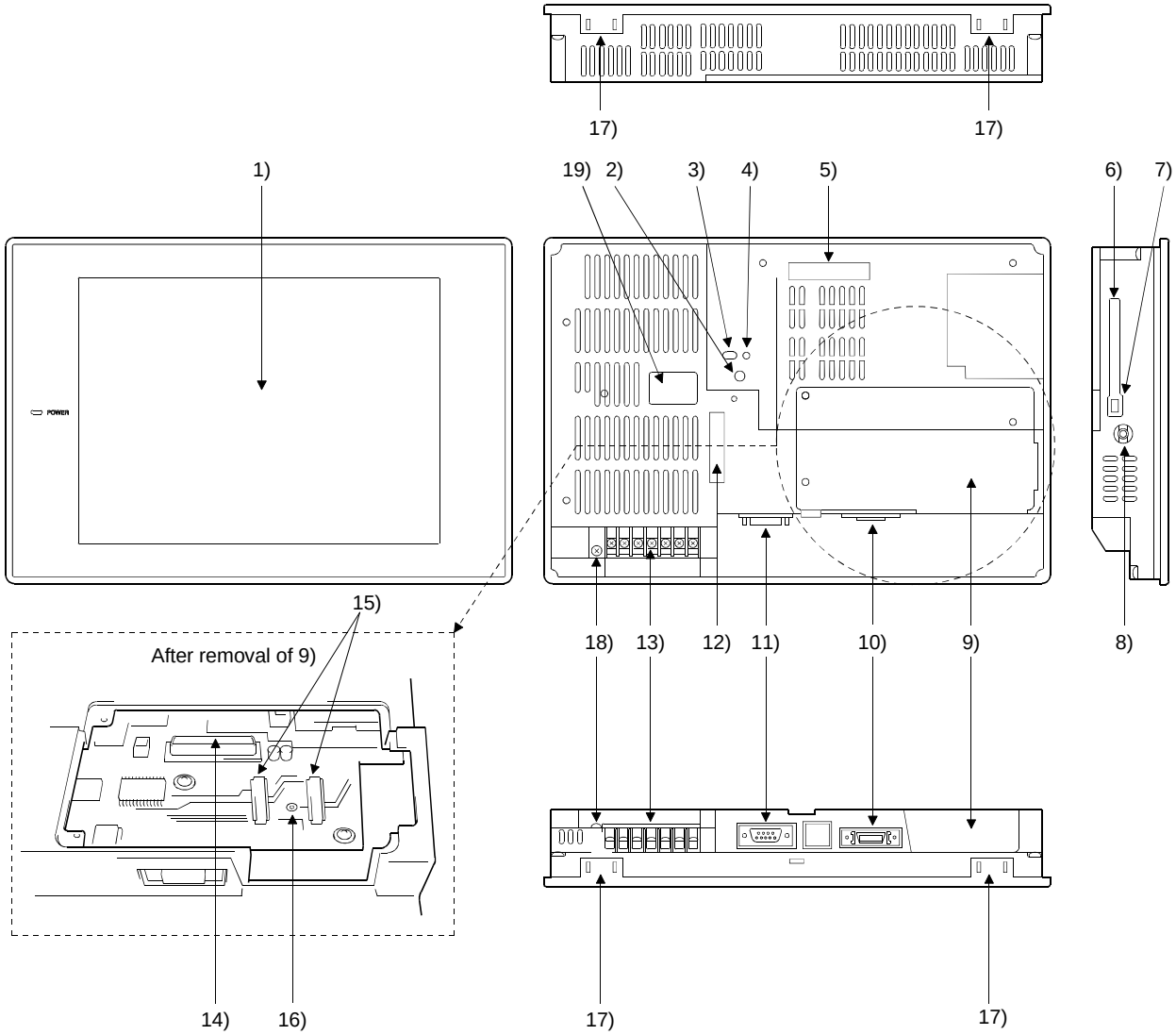
4.2 Part Names And Settings of the A975GOT/A970GOT/A960GOT



Number	Name	Description
1)	Display section	Shows the screen
2)	Reset button	Used to reset the hardware of the GOT
3)	memory card access switch	Used to set the condition of access to the PC card when it is loaded during power-on (Factory-set to OFF) OFF • • • Access from GOT to PC card inhibited ON • • • • Access from GOT to PC card enabled
4)	memory card LED	Indicates whether the PC card may be loaded/unloaded or not OFF • • • PC card may be loaded/unloaded (When switch 3 is OFF) ON • • • • PC card must not be loaded/unloaded (When switch 3 is ON)
5)	Communication unit interface	Interface for loading the communication unit
6)	memory card interface	Interface for loading the PC card
7)	memory card ejection button	Button used to withdraw the PC card
8)	Speech output terminal	For external speaker connection

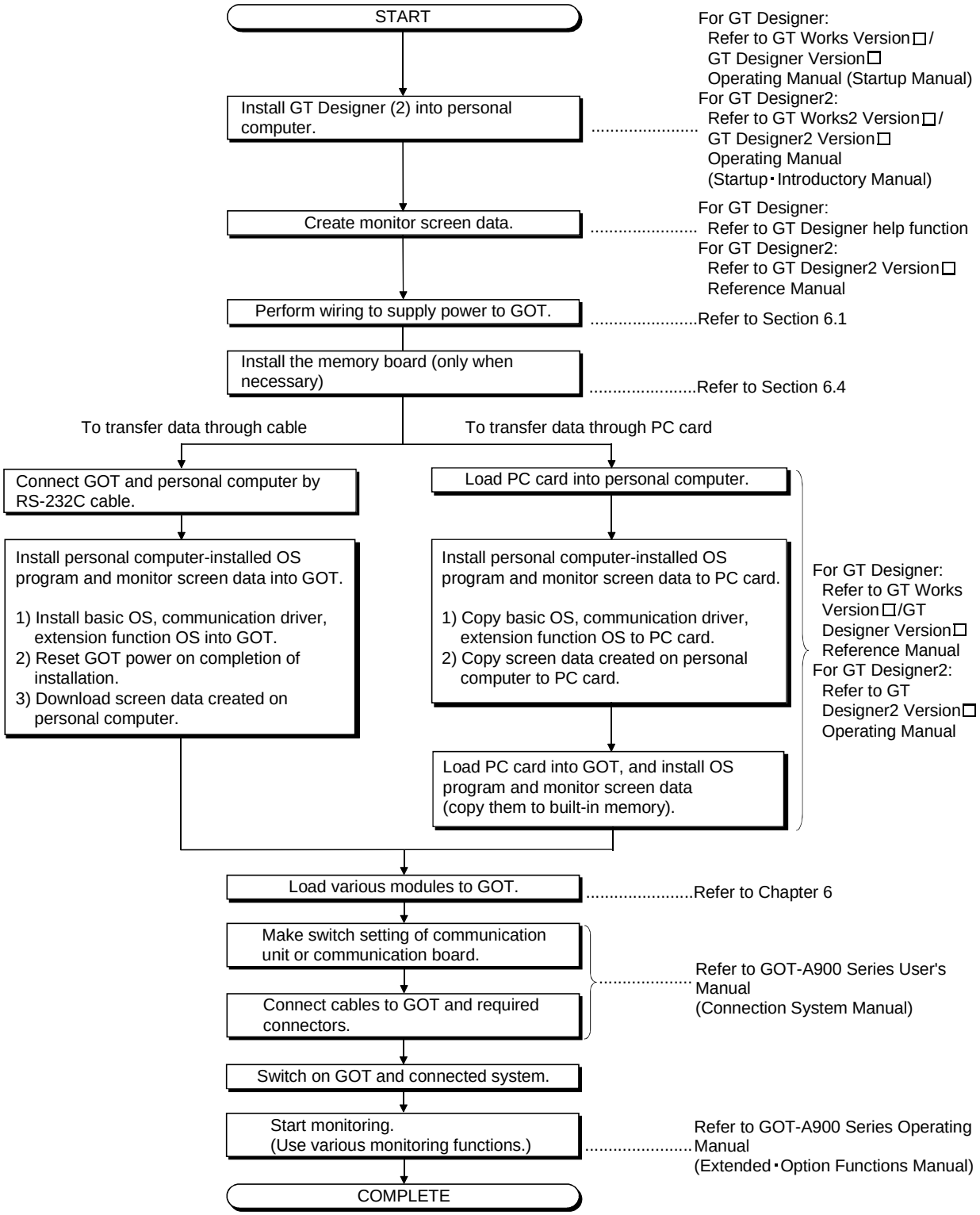
Number	Name	Description
9)	Slot cover	Fixture to cover the slot
10)	Printer interface	For printer connection
11)	RS-232C interface	For connection of personal computer For connecting the bar code reader
12)	Option unit interface	For option unit loading (for future extension)
13)	Terminal block	For power input and external output
14)	Communication board slot	Slot for communication board loading
15)	Memory board slot	Slot for memory board loading
16)	Screw hole for attaching memory board	Screw hole used to attach the memory board
17)	Mounting fixture fitting portion	For mounting fixture fitting
18)	Protective ground terminal ∗1	For earthing (For safety, please make sure to ground this terminal.)
19)	Rating plate	—

∗1 Some GOTs may not be equipped with a protective ground terminal. For details on earthing the protective ground terminal, see Section 6.1.3.

4 - 4

5 ROUGH PRE-OPERATION PROCEDURE

This chapter gives a rough procedure to be performed before starting the operation of the GOT.


START
Install GT Designer (2) into personal computer.
For GT Designer:
Refer to GT Works Version□/ GT Designer Version□ Operating Manual (Startup Manual)
For GT Designer2:
Refer to GT Works2 Version□/ GT Designer2 Version□ Operating Manual (Startup・Introductory Manual)
Create monitor screen data.
For GT Designer:
Refer to GT Designer help function
For GT Designer2:
Refer to GT Designer2 Version□ Reference Manual
Perform wiring to supply power to GOT.
Refer to Section 6.1
Install the memory board (only when necessary)
Refer to Section 6.4
To transfer data through cable
To transfer data through PC card
Connect GOT and personal computer by RS-232C cable.
Load PC card into personal computer.
Install personal computer-installed OS program and monitor screen data into GOT.
1) Install basic OS, communication driver, extension function OS into GOT.
2) Reset GOT power on completion of installation.
3) Download screen data created on personal computer.
Install personal computer-installed OS program and monitor screen data to PC card.
1) Copy basic OS, communication driver, extension function OS to PC card.
2) Copy screen data created on personal computer to PC card.
Load PC card into GOT, and install OS program and monitor screen data (copy them to built-in memory).
For GT Designer:
Refer to GT Works Version□/GT Designer Version□ Reference Manual
For GT Designer2:
Refer to GT Designer2 Version□ Operating Manual
Load various modules to GOT.
Refer to Chapter 6
Make switch setting of communication unit or communication board.
Connect cables to GOT and required connectors.
Refer to GOT-A900 Series User's Manual (Connection System Manual)
Switch on GOT and connected system.
Start monitoring.
(Use various monitoring functions.)
Refer to GOT-A900 Series Operating Manual (Extended・Option Functions Manual)
COMPLETE

MEMO

5 - 2

6 HANDLING

This chapter explains how to handle the GOT main unit and components.

6.1 GOT Main Unit

6.1.1 Handling instructions

This section describes the instructions for handling the GOT main unit and components.

DANGER	• Before installing or removing the GOT main unit to or from the control panel, always switch off the GOT power externally in all phases. Not doing so can cause a GOT failure or malfunction. • Before loading or unloading the communication board, communication unit or memory board to or from the GOT, always switch off the GOT power externally in all phases. Not doing so can cause a unit failure or malfunction. • Before starting wiring, always switch off the GOT power externally in all phases. Not doing so may cause an electric shock, product damage or malfunction.

CAUTION	• The GOT should be used in the environment given in the general specifications of this user's manual. Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration. • When mounting the GOT main unit to the control panel, tighten the mounting screws in the specified torque range. Undertightening can cause a drop, short circuit or malfunction. Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT. • When loading the communication board or communication unit to the GOT, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range. Undertightening can cause a drop, failure or malfunction. Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit. • When loading the memory board to the GOT, do not touch the boards and electronic parts directly. Doing so can cause a GOT malfunction. • When loading the memory board into the GOT, load it into its corresponding GOT slot and tighten the mounting screws in the specified torque range. Undertightening can cause a malfunction due to a poor contact. Overtightening can cause a malfunction due to the damage of the screws or the GOT. • Before loading or unloading the PC card to or from the GOT, set the memory card access switch to the OFF position. Not doing so can cause the PC card data to be corrupted. • Please make sure to ground FG terminal, LG terminal, and protective ground terminal of the GOT power supply section by applying Class D Grounding (Class 3 Grounding Method or higher) which is used exclusively for the GOT. • Correctly wire the power supply section on the GOT after confirming the rated voltage and terminal arrangement of the product. Not doing so can cause a fire or failure.

⚠CAUTION

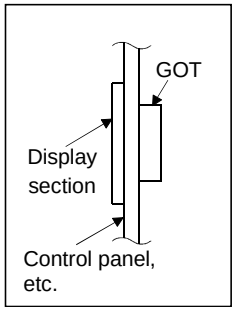
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT.
  Not doing so can cause a fire, failure or malfunction.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Plug the bus connection cable by inserting it into the connector of the connected module until it "clicks".
  After plugging, check that it has been inserted snugly.
  Not doing so can cause a malfunction due to a poor contact.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.

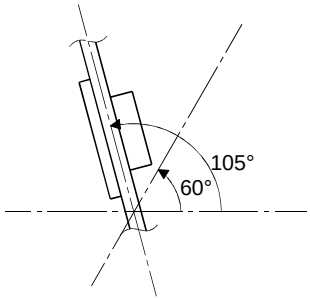
(1) Do not drop the GOT or give it strong impact.
Doing so can cause a failure because the display section is made of glass.

(2) Do not remove the printed circuit board of the GOT from the case.
Doing so can cause a failure.

(3) When mounting the main unit to a control panel or similar, set the display section as shown below.

- When the temperature inside the control panel is 40 to 55°C or less, the mounting angle should be in the range 60 to 105 degrees.





- The GOT will be deteriorated earlier if it is used at the mounting angle other than the above. Therefore, the temperature inside the control panel should be within 40°C.

(4) Tighten the screws in the following specified range.

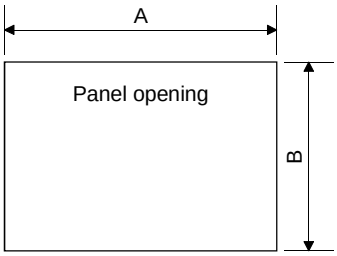
Screw Location	Tightening Torque Range
Protective ground terminal screw (M4 screw)	82 to 110N·cm
Terminal block terminal screw (M3 screw)	59 to 88N·cm
Mounting fixture screw (M4 screw)	36 to 48N·cm
Communication unit mounting screw (M3 screw)	
Communication board mounting screw (M3 screw)	
Option unit mounting screw (M3 screw)	
Case fixing screw (M3 screw)	
SVGA type CRT mounting screw	
Memory board mounting screw (M2.6 screw)	25 to 35N·cm
RS-232C connector mounting screw (#4-40 UNC (inch screw))	20 to 28N·cm

6.1.2 Installation method

This section provides how to install the GOT.

(1) Mounting panel cutting dimensions

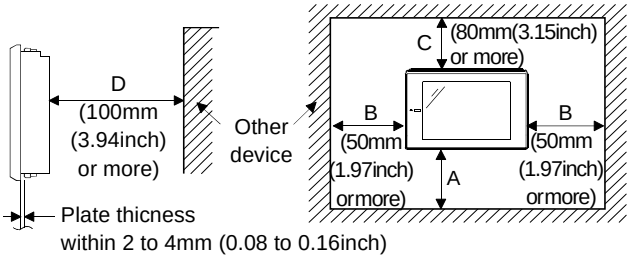
When mounting the GOT on a control panel door, user-made mounting base or similar, the door or mounting base must be cut as indicated below.



Type	A [mm] (inch)	B [mm] (inch)
A985GOT(-V)	302 (11.89) [+1.0 (0.04), -0 (0)]	228 (8.98) [+1.0 (0.04), -0 (0)]
A975GOT A970GOT	289 (11.39) [+1.0 (0.04), -0 (0)]	200 (7.88) [+1.0 (0.04), -0 (0)]
A960GOT	258 (10.17) [+1.0 (0.04), -0 (0)]	183 (7.21) [+1.0 (0.04), -0 (0)]

(2) Mounting position

When mounting the GOT, the following clearances must be left from the other device.



Part A size: Because the connection cable of the GOT is pulled downward, the following space is required according to its radius of curvature.

Type	A [mm] (inch)
A97＊GOT+Communication board	130 (5.12) or more
A985GOT(-V)/A960GOT+Communication board	140 (5.51) or more
A97＊GOT+A9GT-BUSSU/BUS2SU	15 (0.59) or more
A985GOT(-V)/A960GOT+A9GT-BUSSU/BUS2SU	30 (1.18) or more

When using a cable prepared by user, please consider the connector cover to be used and the bending radius of the cable. When using a bar code reader, please consider the dimensions of the connector to be used and the bending radius of the cable.

Part B size: When using a PC card or an speech output device (for a connected cable connector and a wire), a clearance of 100mm (3.94inch) or more is required. When removing a PC card by opening a cover of the memory card interface part, a clearance of 50mm (1.97inch) is required.
(A clearance of 50mm (1.97inch) or more is required when an audio speech device or a memory card is not used.)

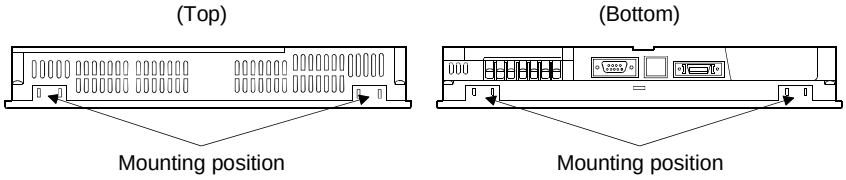
Part C size: Please allow a gap 80mm (3.15inch) or more from the structure and other equipment in the upper part of the unit to often allow good ventilation.

Part D size: When installing devices that generate radiated noise (such as a contactor) or a device that generate heat near the GOT, always leave a clearance of 100mm (3.94inch) or more to the back and 50mm (1.97inch) or more to the left and right to avoid the effects of the noise and heat.

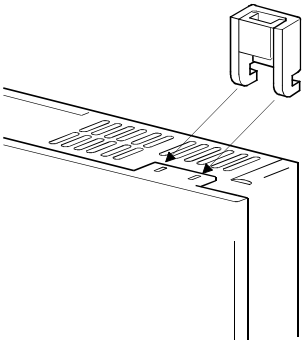
(3) Mounting method

(a) Put the GOT into the panel opening, with its front face first.

(b) Mount the GOT in the following four locations at its top and bottom.



(c) How to mount and fix the mounting fixture is given below.



1) Insert the mounting fixture into the fixture fitting portion of the GOT.
2) Tighten and fix the mounting screw in the specified torque range.
(Overtightening may distort the panel and crimp the protective sheet.)

POINT
Do not paint at the sections where the mounting fixture and control panel contact. Instead provide a conductivity between the mounting fixture and control panel.

6.1.3 Wiring method

⚠ DANGER	● Completely turn off the externally supplied power used in the system when installing or placing wiring. Not completely turning off all power could result in electric shock, damage to the product.

⚠ CAUTION	● Be sure to ground the FG terminal and LG terminal of the GOT power supply section to the protective ground conductor. Not doing so could result in electric shock or erroneous operation. ● When wiring in the GOT power section, be sure that it is done correctly by checking the product's rated voltage and the terminal layout. Connecting a power supply that is different from the rating or incorrectly wiring the product could result in fire or erroneous operation. ● Tighten the terminal screws of the GOT power supply section within the specified torque range. If the terminal screws are loose, it could result in short circuits, erroneous operation or erroneous operation. Tightening the terminal screws too far may cause damages to the screws and/or the module, resulting in fallout, short circuits, or erroneous operation. ● Be sure there are no foreign substances such as sawdust or wiring debris inside the GOT main unit.

REMARK

General view of noise countermeasures

There are two types of noise: radiated noise, which is transmitted through the air, and conducted noise, which is transmitted through a connection wire. In noise countermeasures, the both two types of noise should be taken into account. As the noise countermeasures, there are the following three methods.

(1) Block noise
  (a) Keep signal wires away from a possible noise source as power wires or high-power driving circuits.
  (b) Shield signal wires.

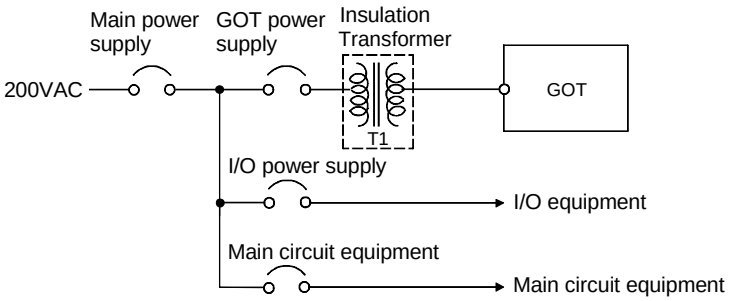
(2) Reduce generated noise
  (a) Reduce the noise generated from high-power motor drive circuits.

(3) Ground noise without fail
  (a) Earth the grounding wire to the ground without fail.
  (b) Use a grounding wire as thick and short as possible to ensure low grounding impedance.
  (c) Separate the grounding between power and control systems.

1) Power supply wiring

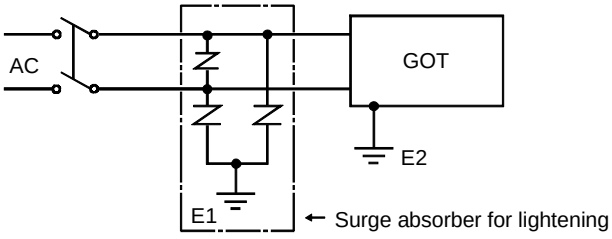
- Separate the GOT's power supply line from the lines for I/O devices and power devices as shown below.
  When there is much noise, connect an insulation transformer.

Power supply wiring diagram



- 100VAC, 200VAC and 24VDC wires should be twisted as dense as possible. Connect the modules with the shortest distance.
  Also, to reduce the voltage drop to the minimum, use the thickest wires possible (0.75 to 2mm^2).
  Use a solderless terminal for M3 screw. Also, be sure to tighten the M3 screw within tightening torque 0.55 to 0.88 N•m in order not to cause trouble.
- Do not bundle the 100VAC, 200VAC and 24VDC wires with, or run them close to, the main circuit (high voltage, large current) and I/O signal lines. Reserve a distance of at least 100 mm from adjacent wires.
- As a countermeasure to power surge due to lightening, connect a surge absorber for lightening as shown below.

Lightening surge absorber connection diagram



POINT

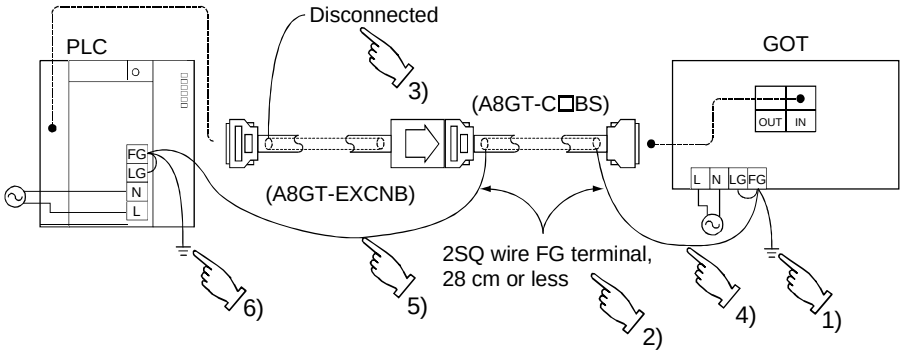
1) Separate the ground of the surge absorber for lightening (E1) from that of the GOT (E2).
2) Select a surge absorber for lightening whose power supply voltage does no exceed the maximum allowable circuit voltage even at the time of maximum power supply voltage elevation.

6 - 6

2) Connection Cable Wiring

- Do not bind connection cables with the main circuit (high voltage, heavy current) or I/O signal cables, or lay them close to each other.
- When using A8GT-C□EXSS-1 or A8GT-C□BS, ground wires as below.

(1) When using A8GT-C□EXSS-1 cable



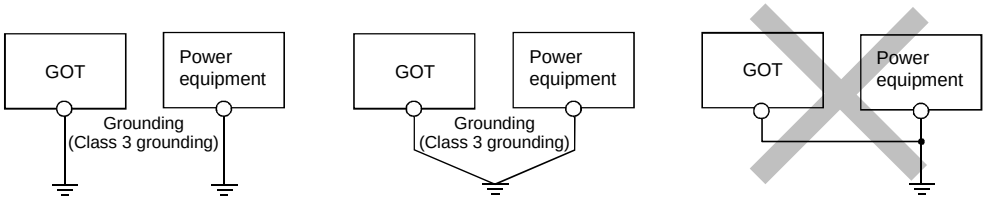
1) Connect the LG and FG terminals of GOT unit power to the ground through the terminal block with one wire.
2) Use FG wires of 28 cm or less for the A8GT-C□BS cable.
3) Do not connect the FG grounding wire of A8GT-EXCNB cable.
4) Connect the A8GT-C□BS cable's FG wire to FG of the GOT unit power terminal block.
5) Connect the A8GT-C□BS cable's FG wire on the PLC side to FG of the PLC power supply module.
6) Connect the LG and FG terminals of the terminal block on the PLC to ground with one wire.

(2) When using A8GT-C□BS cable

Connect the A8GT-C□BS cable's FG wires on the both sides to the FG terminals on the power terminal block of the both side GOTs.

3) Grounding

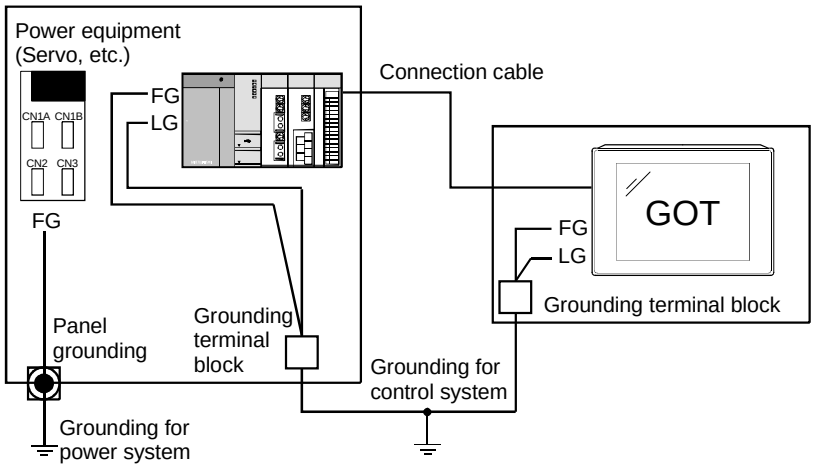
- For grounding, perform the following:
  Use a dedicated grounding wire as far as possible. (Grounding resistance of 100Ω or less.)
- When a dedicated grounding cannot be performed, use (2) Common Grounding shown below.
  Also, be sure to take noise countermeasures other than grounding.



(1) Independent grounding····· Best (2) Common grounding····· Good (3) Joint grounding···· Not allowed

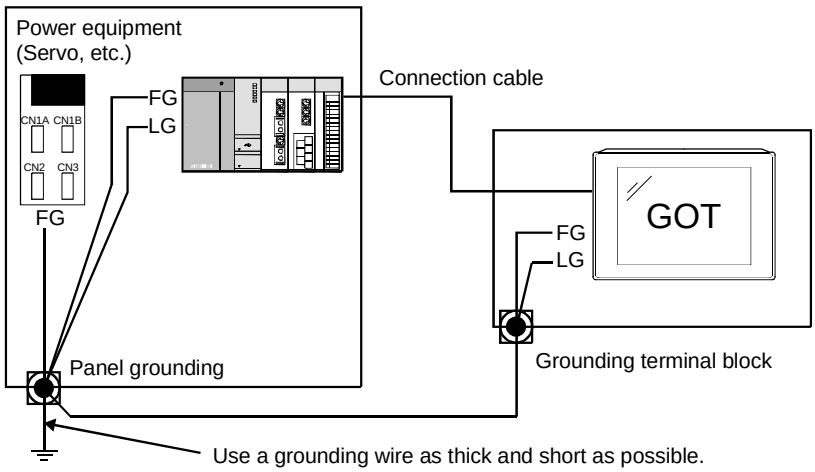
- For grounding a cable, use the cable of 2 mm^2 or more.
  Position the ground-contact point as closely to the sequencer as possible, and reduce the length of the grounding cable as much as possible.

a) An example of independent grounding



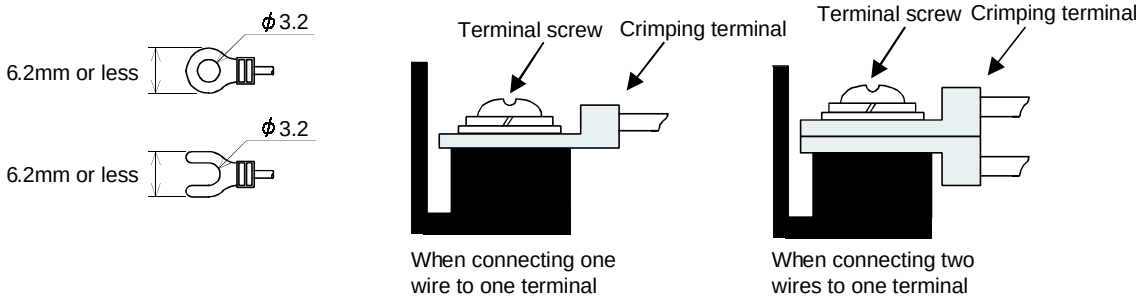
*For control system grounding, apply single-point grounding for one system.
Especially for the devices communicating each other, be sure to earth the grounding wire at one point.

b) An example of common grounding



*Apply single-point grounding for one system.

c) Recommended terminal shapes

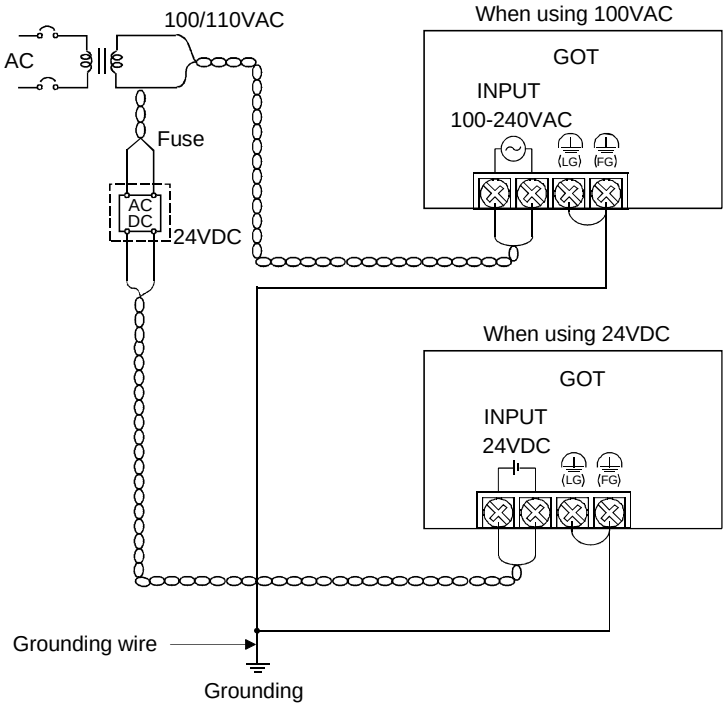


Applicable crimping terminal	RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A

6 - 9

4) Connecting to the GOT Power Section

The following diagram shows the wiring example of power lines, grounding lines, etc. to the GOT power section.



POINT

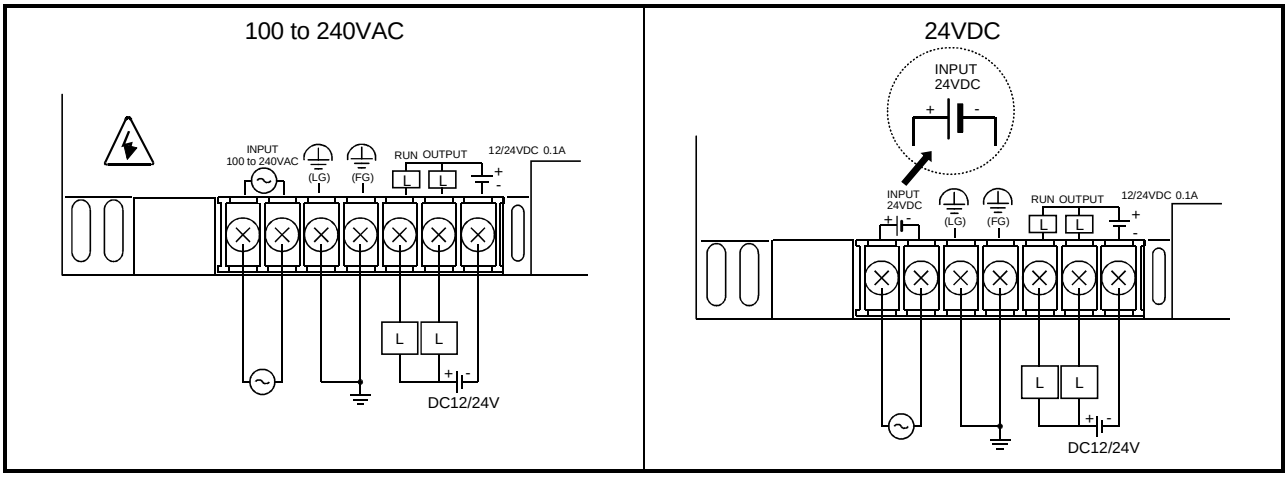
(1) Use the thickest possible (max. 2 mm^2 (14 AWG)) wires for the 100/200 VAC and 24 VDC power cables. Be sure to twist these wires starting at the connection terminals. To prevent a short-circuit should any screws loosen, use solderless terminals with insulation sleeves.

(2) When the LG terminals and FG terminals are connected, be sure to ground the wires. Do not connect the LG terminals and FG terminals to anything other than ground. If LG terminals and FG terminals are connected without grounding the wires, the PLC may be susceptible to noise.
In addition, since the LG terminals have potential, the operator may receive an electric shock when touching metal parts.

6 - 10

How to wire the GOT power supply section is explained below.

(a) Wiring diagram



*1: The GOTs of the following hardware versions are not equipped with protective ground terminals because they do not require earthing. The protective ground terminal is not provided because this product does not require earthing.

Item	Type	Hardware version
A975GOT	A975GOT-TBA(-B)	Version L (June, 2001) or later
	A975GOT-TBD(-B)	
	A975GOT-TBA-EU	Version E (July, 2003) or later
A970GOT	A970GOT-TBA(-B)	Version L (June, 2001) or later
	A970GOT-TBD(-B)	
	A970GOT-SBA	
	A970GOT-SBD	
	A970GOT-LBA	
	A970GOT-LBD	
	A970GOT-TBA-EU	Version E (July, 2003) or later
	A970GOT-SBA-EU	Version S (July, 2003) or later
	A970GOT-LBA-EU	Version L (July, 2003) or later
A960GOT	A960GOT-EBA	Version H (June, 2001) or later
	A960GOT-EBD	
	A960GOT-EBA-EU	Version V (August, 2002) or later

*2: When the conventional GOT's protective ground terminal has the wire fixed, remove or insulate the wire.

(b) How to use the external outputs

1) RUN

Outputs whether the GOT operation is normal or abnormal.
Use this output when it is desired to monitor the GOT operation on the PLC CPU, for example.
Import this output to the input module and check it in the sequence program.

ON: Normal operation, OFF: Abnormal operation

2) OUTPUT

External outputs can be provided (lamp is lit, buzzer beeps) by switching on the bit device GB1 in the GOT with the status monitoring function and touch switch (bit) function.

6.1.4 Precautions on wiring the part which matches the EMC Directives

Connect and wire GOT-A900 series equipment as instructed below.
If the GOT-A900 series equipment is configured in a way that differs from the following instructions, the system will not comply with EMC directives.
The GOT case is made of different material depending on the hardware version.
Make sure to confirm the hardware version of the GOT used, as the wiring or connection method varies with the case material.
The following table shows the GOT hardware version and the corresponding case material.

Type	Material	
	Conductive material case	Non-conductive mold (resin) case
A985GOT-TBA-EU	A or later	—
A975GOT-TBA-EU	A or later	E or later (July, 2003)
A970GOT-TBA-EU	A or later	E or later (July, 2003)
A970GOT-SBA-EU	A or later	S or later (July, 2003)
A970GOT-LBA-EU	A or later	L or later (July, 2003)
A960GOT-EBA-EU	A or later	V or later (August, 2003)

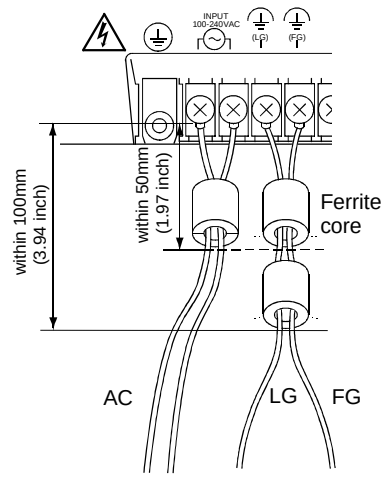
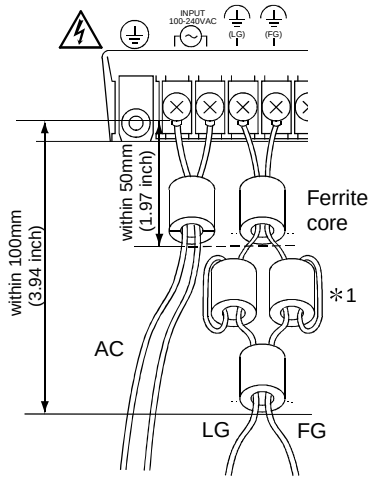
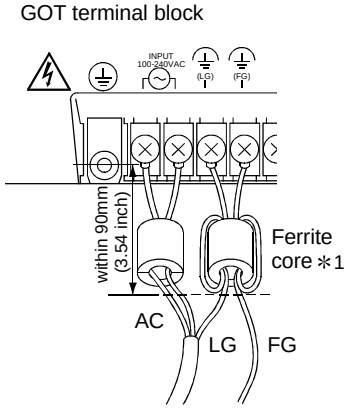
(1) Method to connect the power wire, ground wire and protective ground terminal

(a) Method to connect the power wire and ground wire

Connect the power wire and connection cable as shown in the illustration, and be sure to attach a ferrite core (TDK type ZCAT3035-1330) within the range shown below.

Lead the power wire and ground wire as shown in Section 1.1.2 (2).

Always ground the LG and FG wires.

<table>
<tr><th colspan="2">For A985GOT</th><th rowspan="2">A97□/960GOT</th></tr>
<tr><th>For Bus connection</th><th>For RS-422 connection</th></tr>
<tr>
<td>GOT terminal block
 
</td>
<td>GOT terminal block
 
</td>
<td>GOT terminal block
 
</td>
</tr>
</table>

∗1: Wrap the FG and LG wire around the ferrite core.

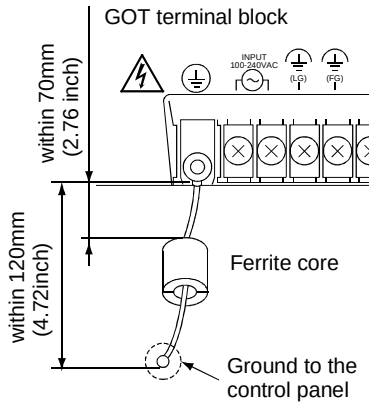
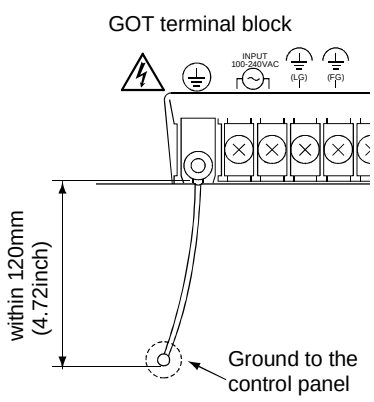
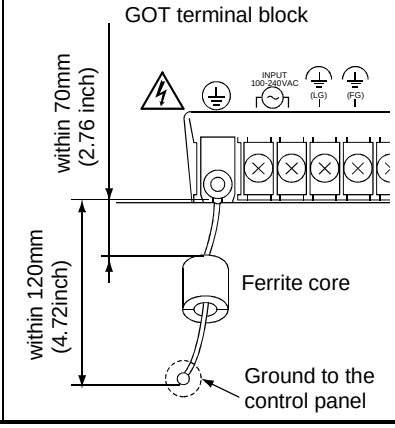
6 - 12

b) Method to ground the protective ground terminal

1) For GOT with conductive metal case

Be sure to ground the protective ground terminal of the GOT to the control panel.
At this time, keep the length of the ground wire grounding the control panel to within 120mm (4.72inch).
Moreover, be sure to install the ferrite core (TDK brand ZCAT3035-1330) within 70mm from the protective ground terminal.

(The ferrite core is not used when using the A985GOT RS-422 connection.)

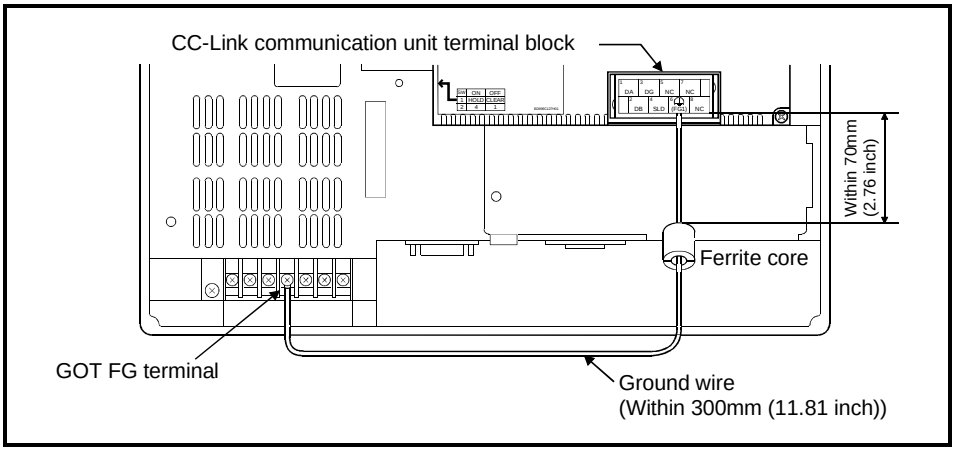
<table>
<tr><th colspan="2">For A985GOT</th><th rowspan="2">A97□/960GOT</th></tr>
<tr><th>For Bus connection</th><th>For RS-422 connection</th></tr>
<tr>
<td> 
</td>
<td> 
</td>
<td> 
</td>
</tr>
</table>

2) For GOT with non-conductive mold (resin) case

This GOT does not include the protective ground terminal, as it does not require grounding.

c) For CC-Link connection

Use the grounding wire (300mm or less) to connect the FG terminal of the CC-Link communication unit to that of the GOT power supply section.
Then, attach the ferrite core (ZCAT3035-1330) within 70mm of the FG terminal of A8GT-J61BT13.



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(2) Producing the ground cable

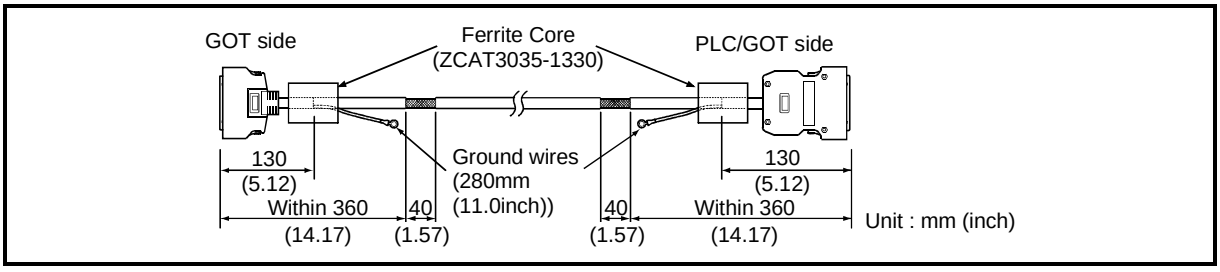
Produce the cable for the GOT with the following method.
When producing the cable, a ferrite core, cable clamp and cable shielding material are required.
The cable clamp used by Mitsubishi Electric for the EMC specification compatibility test is shown below.

- TDK brand ZCAT3035-1330 Ferrite Core
- TDK brand ZCAT2436-1330 Ferrite Core
- Mitsubishi Electric Model AD75CK cable clamp
- Japan Zipper Tubing Co., Ltd. Zipper tube SHNJ type

a) BUS connection cable

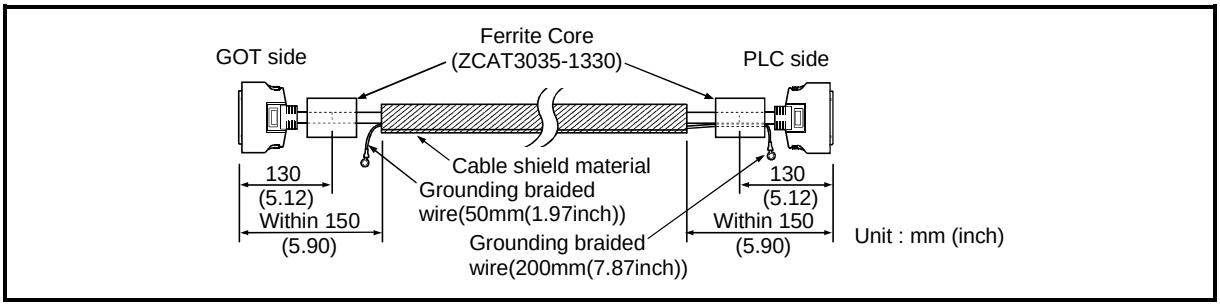
1) For A8GT-C100/200/300EXSS, A8GT-C100/200/300BS.

- Cut the connection wire protruding from both ends of the cable to the lengths shown below.
- Peel the sheath (with the length shown below) at both ends of the cable, and expose the shield braided wire for grounding. (for grounding with cable clamps (refer to Section (3))



2) For other cables between GOT and base unit

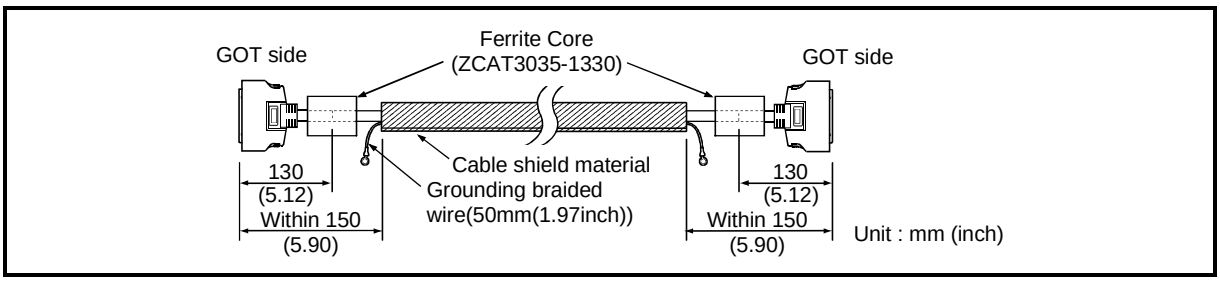
- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Pass the grounding braided wire on the programmable logic controller side through the core.



6 - 14

3) For other cables between GOTs

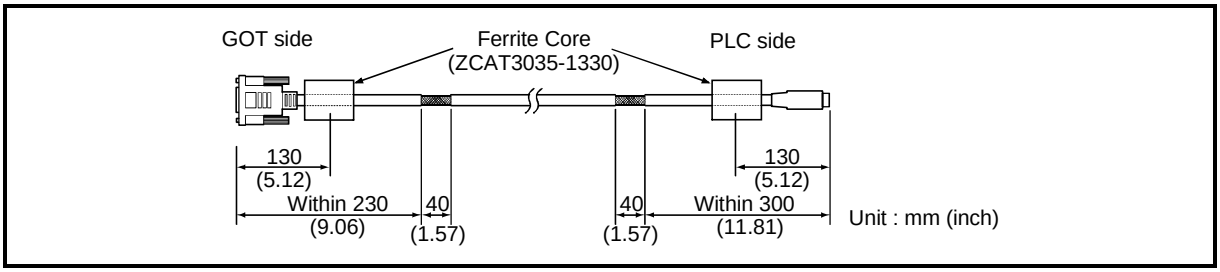
- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Do not pass the grounding braided wire on the programmable logic controller through the core.



b) CPU Direct connection

1) For RS-232C cable (QC30R2)

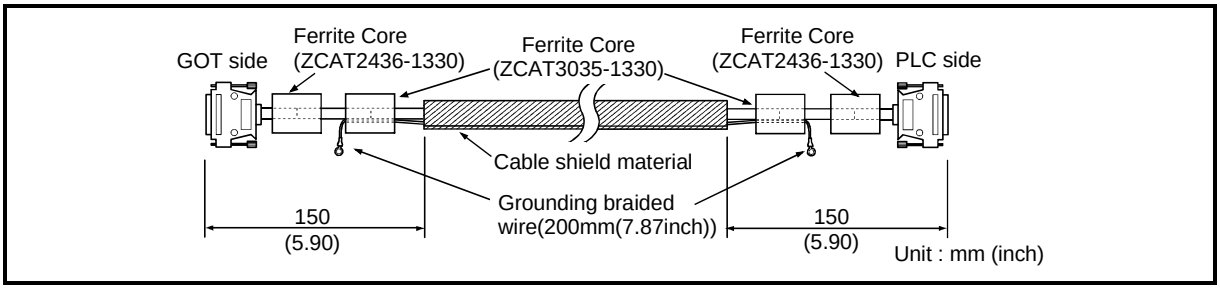
- Peel the sheath (with the length shown below) at both ends of the cable, and expose the shield braided wire for grounding.
  (for grounding with cable clamps (refer to Section (3))



2) RS-422 cable (For AC30/100/300R4-25P)

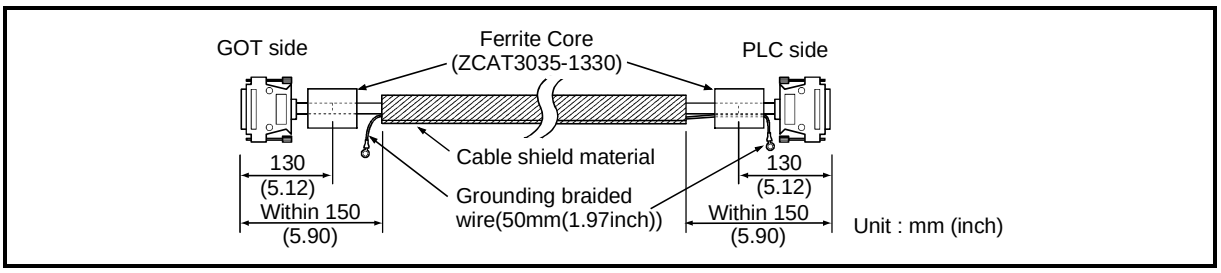
For A985GOT

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Do not pass the braided wire for grounding through the ZCAT2436-1330 ferrite core.



For A97*/960GOT

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Pass the grounding braided wire on the programmable logic controller side through the core.



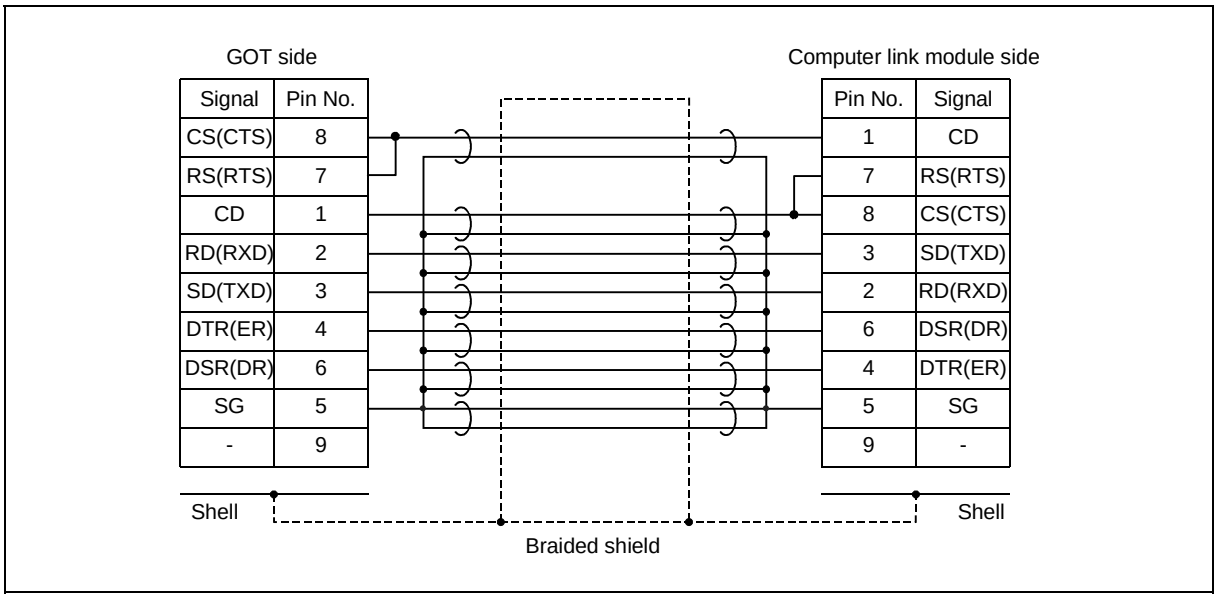
c) Computer link connection

1) For RS-232C cable

The RS-232C cable used to connect the GOT, the computer link module and PLC CPU with computer link function must be prepared by the user. The RS-232C cable connection diagram and the connector are as follows.

Connection diagram

- If D-sub 9-pin is used for the connector of the computer link module. (A1SJ71QC24(-R2), A1SJ71UC24-R2, A1SJ71C24-R2, A1SCPUC24-R2, A2CCPUC24, QJ71C24(-R2))



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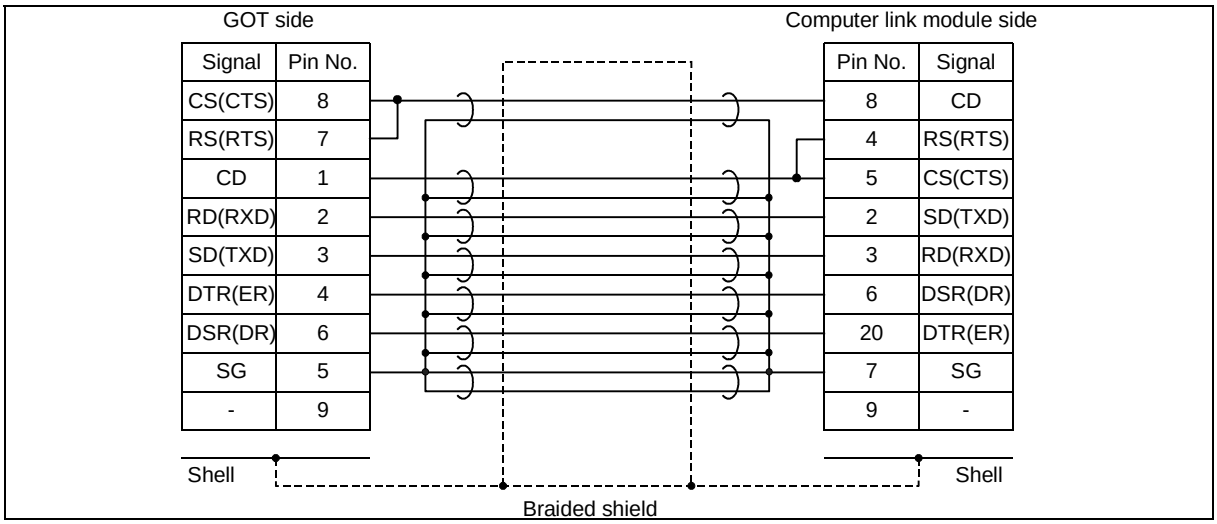
- If D-sub 25-pin is used for the connector of the computer link module. (AJ71QC24(-R2), AJ71UC24)



Precautions for producing cable

- Make a twisted pair for each signal and SG.
- Connect the braided shield to the connector shell (both ends).
- The cable used for the Mitsubishi EMC Directive compatibility test had the following specifications.

Item	Specification
Cable type	Twisted pair shield cable
Conductor section area (mm^2)	0.2

Connector and connector cover

- GOT connector
  Use the connector matching the following model for the GOT.
  9-pin D-sub (male) inch screw type
  manufactured by DDK
  17JE-23090-27 (D3CC)

- Connector of computer link module
  Refer to the user's manual of the computer link module.

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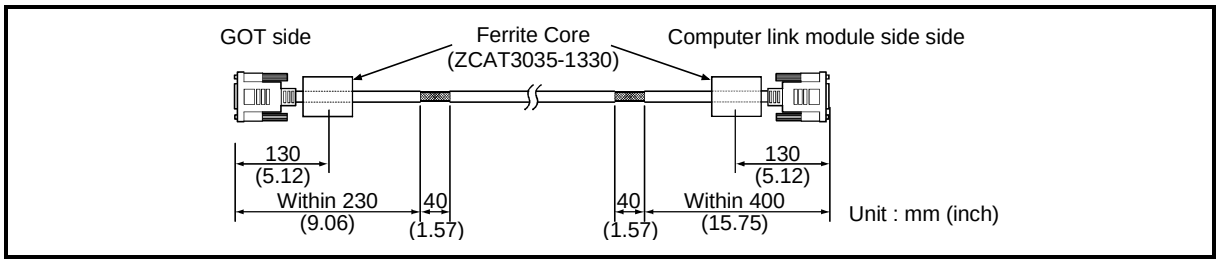
Cable production method

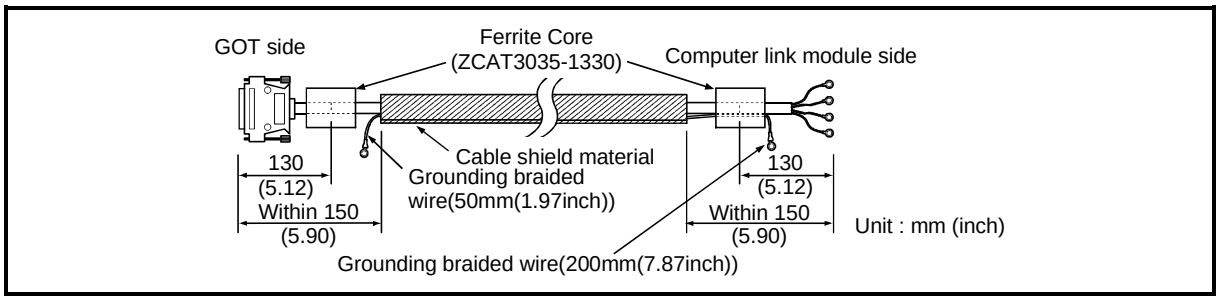
- Peel the sheath (with the length shown below) at both ends of the cable, and expose the shield braided wire for grounding.
  (for grounding with cable clamps (refer to Section (3))
- The cable must be 15m or shorter.



2) For RS-422 cable (AC30/100/300R4-25P)
Refer to (2) (b) 1)

3) For RS-422 cable (User created cable)
Refer to the GOT-A900 series User's Manual (Connection System Manual) for information about the cable creation method.

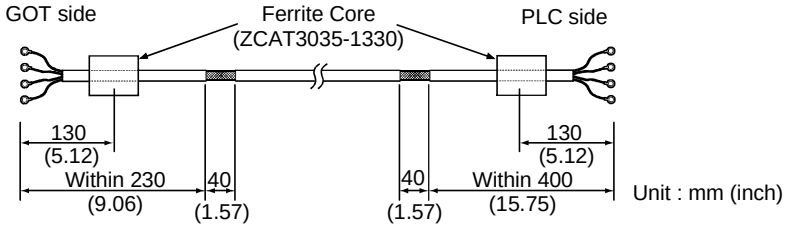
- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Pass the grounding braided wire on the programmable logic controller side through the core.



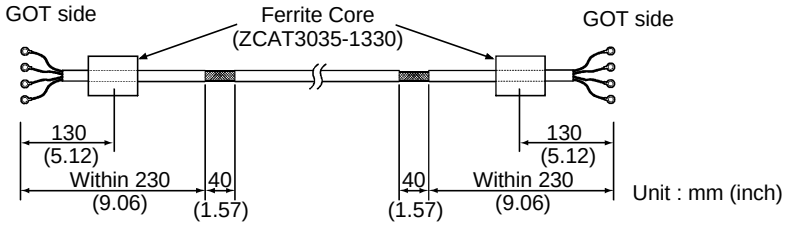
d) CC-Link connection (CC-Link dedicated cable)

- Strip the outer insulation layer at both ends of the cable by the length below to expose the braided shield for grounding.
  (for grounding with cable clamps (refer to Section (3))

- When using a CC-Link dedicated cable between GOT and PLC

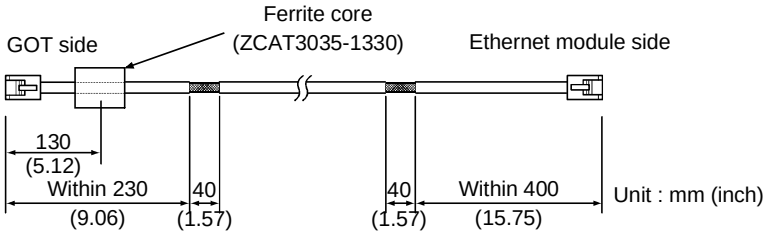


- When using a CC-Link dedicated cable between GOT and GOT



e) Ethernet Connection (Shielded twisted pair shielded cable (10BASE-T))

- Strip the outer insulation layer at both ends of the cable by the length below to expose the braided shield for grounding.
  (for grounding with cable clamps (refer to Section (3))



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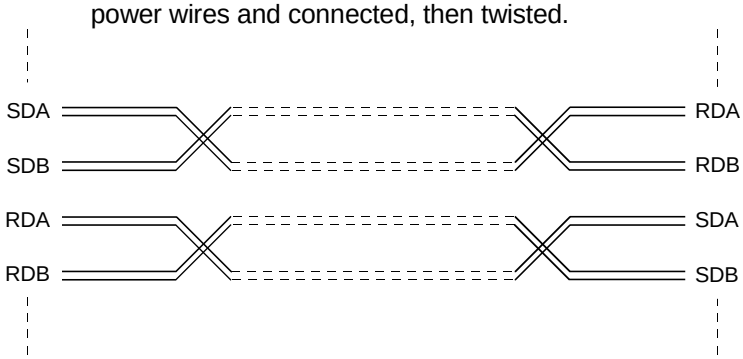
f) PLC and microcomputer (manufactured by other company) connection
Produce the cable (RS-232C cable and RS-422 cable) for connecting the GOT to a PLC or microcomputer (manufactured by other company) with reference to the GOT-A900 Series User's Manual (Connection System Manual).

POINT

Configure the system to meet the EMC Directive specifications for the connected device when connecting the GOT with the PLC or microcomputer (manufactured by other company).
This section gives the instructions to comply with the EMC Directive. The manufacturer should finally decide the EMC Directive compliance method or judge if the configured system is compliant with the EMC Directive.

1) For RS-422 cable

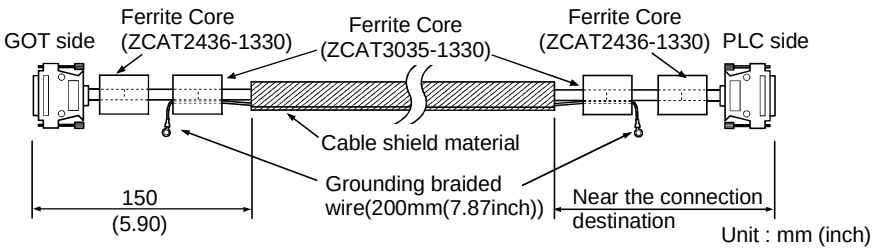
- Each signal wire (excluding SG and FG) should be made into a two power wires and connected, then twisted.



- Make the SG wire more than two wires and connect.

For A985GOT

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material by the length shown below.
- Do not pass the braided wire for grounding through the ZCAT2436-1330 ferrite core.



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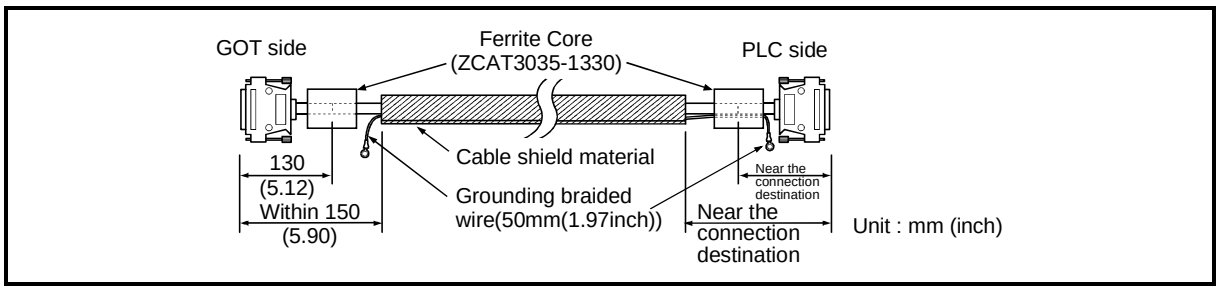
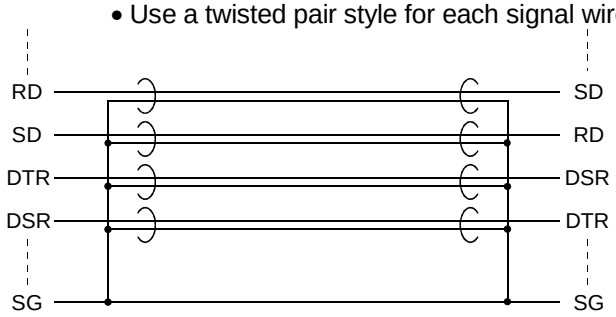
For A97*/960GOT

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material by the length shown below.
- Pass the grounding braided wire on the programmable logic controller side through the core.

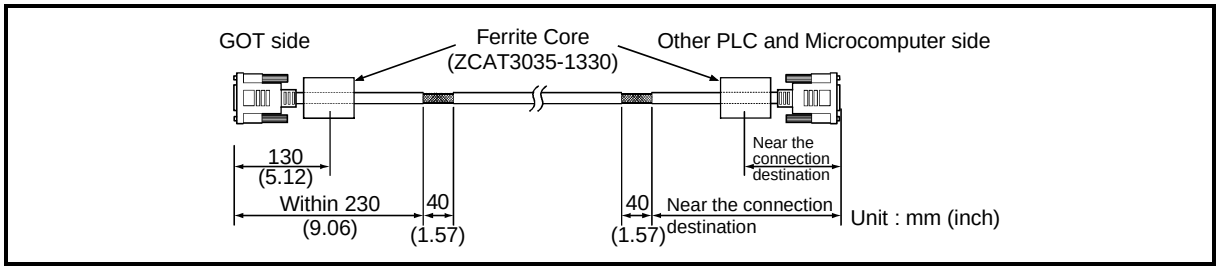


2) For RS-232C cable

- Use a twisted pair style for each signal wire (except SG, FG) with SG.

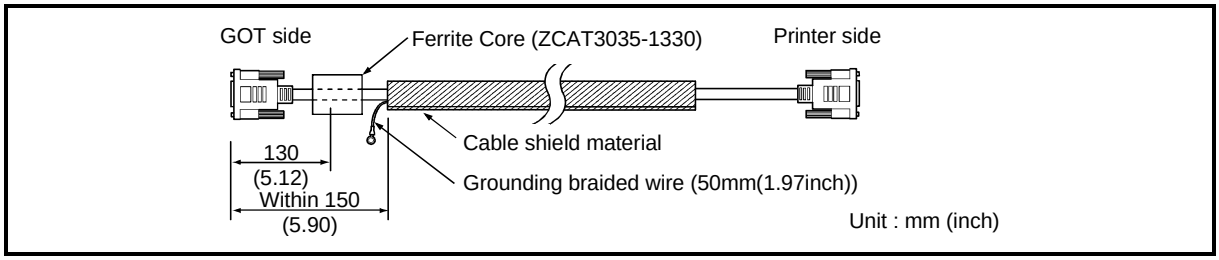


- Strip the outer insulation layer at both ends of the cable by the length shown below to expose the braided shield for grounding.
  (for grounding with cable clamps (refer to Section (3))



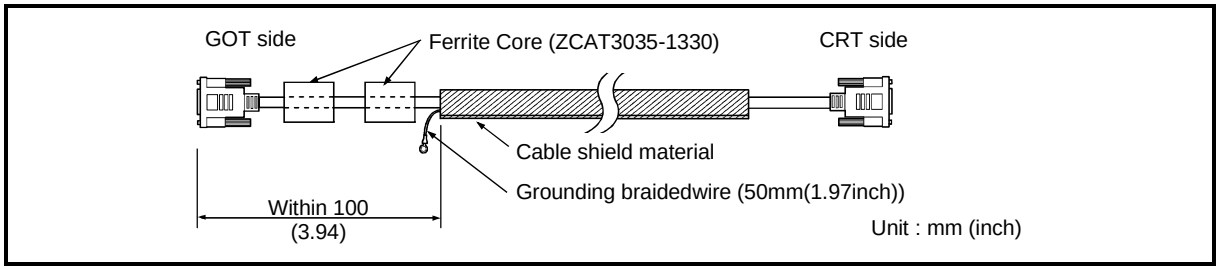
g) Printer cable

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material by the length shown below.



h) CRT cable (CRT cable enclosed with CRT)

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material by the length shown below.
- The cable length must be within 1.5m.

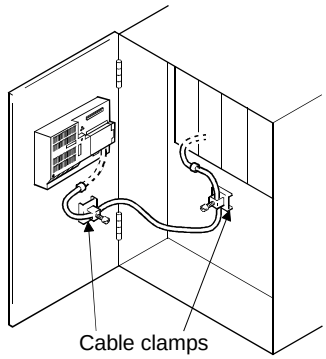


(3) Grounding the cable

Ground the cable and grounding wire to the control panel where the GOT and base unit are grounded.

(a) GOT with conductive metal case

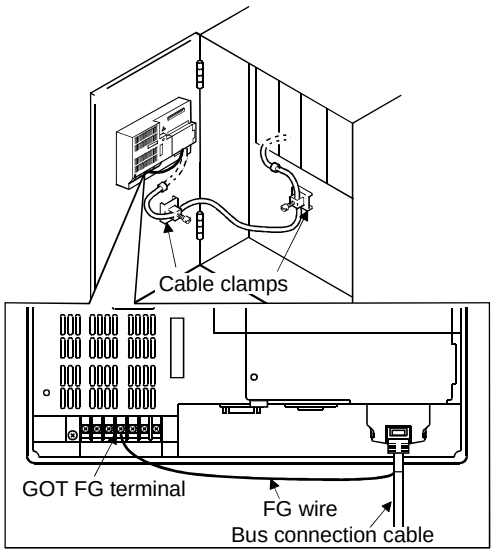
Grounding to the panel with the cable clamps



- For bus connection cable (For A8GT-C100/C200/300EXSS, A8GT-C100/200/300BS), ground the braided shield and grounding wire on to the panel with the cable clamp (AD75CK).
- For RS-232C cable, CC-Link dedicated cable and shielded twisted pair cable, ground the braided shield onto the panel with the cable clamp(AD75CK) panel.
- For RS-422 cable and printer cable ground the grounding braided wire on to the panel with a screw.

(b) GOT with non-conductive mold (resin) case

Grounding to the panel with the cable clamps



- For the A8GT-C100/200/300EXSS or A8GT-C100/200/300BS bus connection cable, ground the braided shield onto the panel with the cable clamp (AD75CK).
  Ground the grounding wire to the FG terminal, which is situated on the GOT power supply section.
- For RS-232C cable, CC-Link dedicated cable and shield twisted pair cable, ground the braided shield onto the panel with the cable clamp (AD75CK).
- For other bus cable, RS-422 cable and printer cable ground the grounding braided wire to the panel with a screw.

6.1.5 Human sensor (specific to A985GOT (-V))

1) Features of the human sensor.

The human sensor mounted in the A985GOT, can detect operators in the sensor detection area and turn the backlight ON and OFF automatically.
Refer to the GOT-A900 Series Operating Manual (Extended·Option Functions Manual) for details on setting the human sensor.

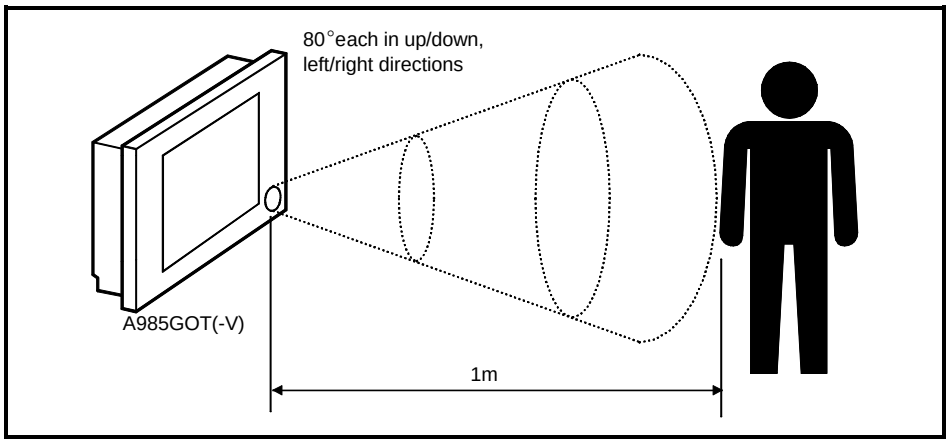
2) Detection range

The performance of the human sensor is shown below.

Item		Description	Conditions
Detection length [m] (inch)		1 (39.37)	1. The temperature difference from the background must be 3±1°C or more. 2. The movement speed is 0.3 to 2.0m/s.
Detection range	Up/down	80°	
	Left/right	80°	
Detection delay time [sec.]		0 to 4	

∗ Note that the human sensor may react even under conditions other than above.

The details of the detection range are as shown below.



3) Cautions when using human sensor

∗ If there is a transparent material such as glass or acrylic in the sensor detection area, the human sensor cannot detect a human through it.
∗ The human sensor may not function correctly in places where sudden temperature changes occur such as near the blow-off port of air conditioners.
∗ The human sensor may not function correctly in places where the sensor section is subject to direct sun rays.

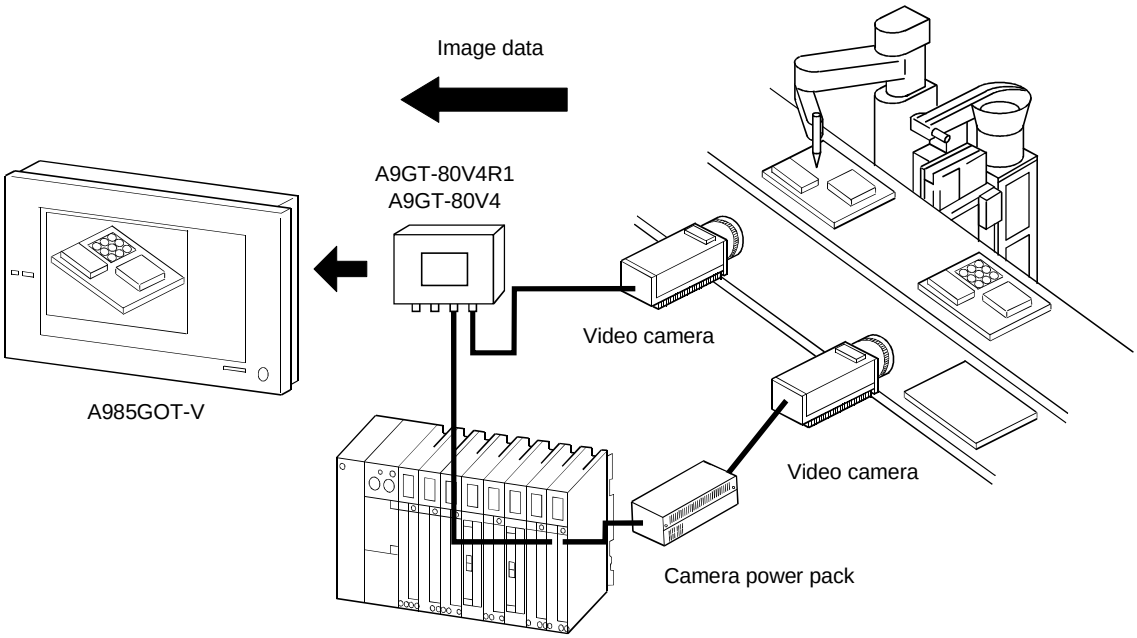
6.1.6 Video input function (specific to A985GOT-V)

By mounting a video/RGB hybrid interface unit (A9GT-80V4R1) or video input interface unit (A9GT-80V4) to the A985GOT-V, images taken by video cameras can be displayed on the video window of the A985GOT-V.
It is possible to use the A985GOT-V as a vision sensor monitor.
For details of the video window, refer to the following manual.

- For GT Designer : GT Works Version□/GT Designer Version□ Reference Manual
- For GT Designer2 : GT Designer2 Version□ Reference Manual

For details of the system configuration, refer to the following manual.

- GOT-A900 Series User's Manual (Connection System Manual)



∗ The camera power pack may be necessary depending on the vision sensor used.

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6.1.7 RGB input function (specific to A985GOT-V)

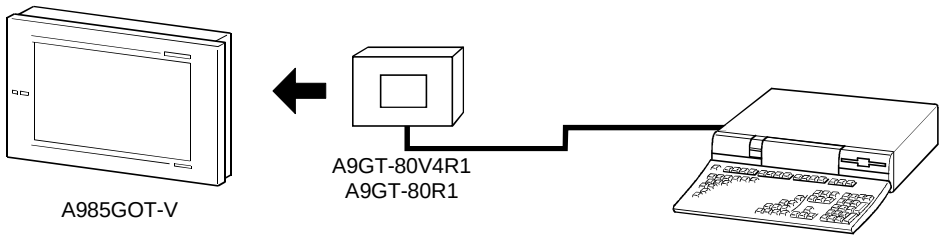
By mounting a video/RGB hybrid interface unit (A9GT-80V4R1) or RGB input interface unit (A9GT-80R1) to the A985GOT-V, a personal computer display can be shown on the GOT as an RGB screen.
Also, by using a RGB output type vision sensor, images taken with a video camera can be displayed on the A985GOT-V.
For details of the RGB screen, refer to the following manual.

- For GT Designer : GT Works Version□/GT Designer Version□ Reference Manual
- For GT Designer2 : GT Designer2 Version□ Reference Manual

For details of the system configuration, refer to the following manual.

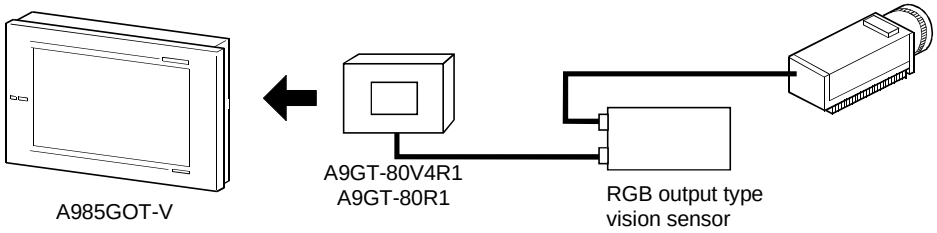
- GOT-A900 Series User's Manual (Connection System Manual)

When connecting to a personal computer



∗ You can not show the computer's display on the computer monitor and the A985GOT-V at the same time.

When using the RGB output type vision sensor and connecting to a video camera



6.2 Slot Cover

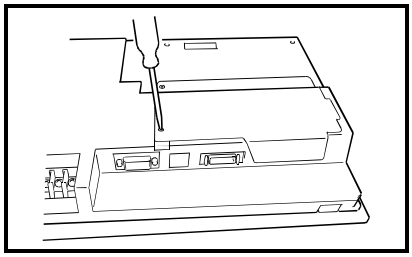
Use the slot cover to protect the communication board slot and memory board slot of the GOT.

6.2.1 Mounting and dismounting procedures

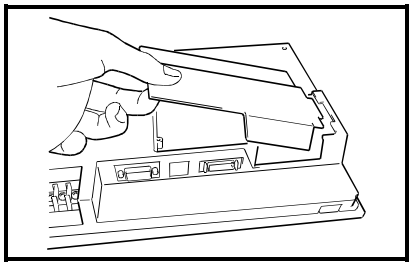
(1) Dismounting

Before mounting the communication board and memory board, the slot cover must be removed.

When using the communication unit, the slot cover need not be removed.



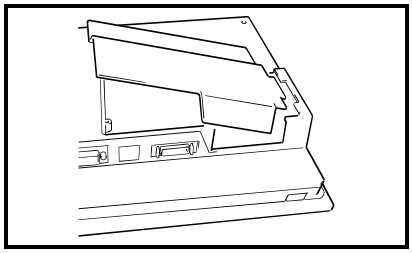
1) Loosen the mounting screws (2 pcs.) which secure the slot cover.



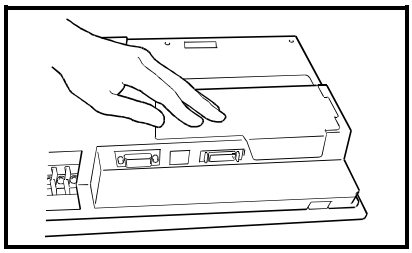
2) Remove the slot cover.
Save the removed slot cover.

(2) Mounting

After loading the memory board, the slot removed must be mounted again.



1) Insert the convex portion of the slot cover into the concave portion of the GOT.



2) Securely push the slot cover and tighten and fix the mounting screws (2 pcs.) in the specified torque range.

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6.3 Protective Sheet

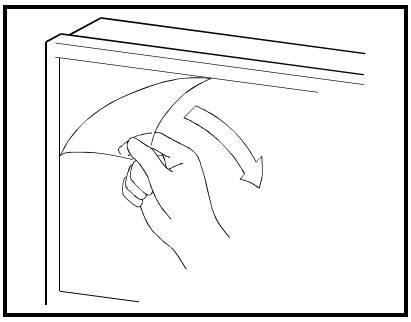
The protective sheet is used to protect the operation surface from scratches and contamination which may take place when the touch keys of the GOT display section are operated.

6.3.1 Protective sheet types

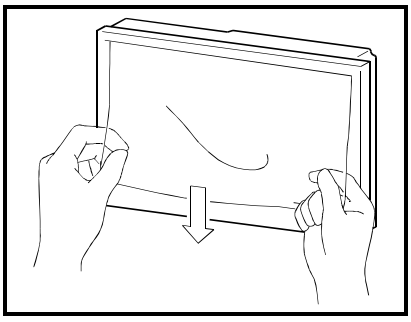
Choose any of the following types according to the GOT used.

Type	Description
A9GT-80PSC	Transparent protective sheet for A985GOT(-V), MITSUBISHI logotype can be removed.
A9GT-70PSC	Transparent protective sheet for A975/970GOT, MITSUBISHI logotype can be removed.
A9GT-60PSC	Transparent protective sheet for A960GOT, MITSUBISHI logotype can be removed.

6.3.2 Mounting procedure



1) From the display section of the GOT, peel off the sheet applied before shipment from the factory or the old protective sheet.



2) Peel off the release film of the new protective sheet and apply its adhesive surface to the display section of the GOT. When applying the protective sheet, exercise care not to make it loose and not to make gaps on the adhesive surface.

6.4 Memory Board

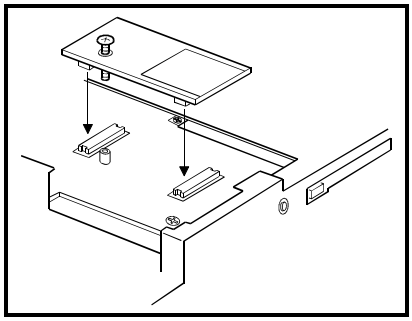
The memory board is used to store the optional function OS program (ladder monitoring function, recipe function, speech output function, etc.) and to increase the built-in memory capacity.

6.4.1 Memory board types

The following memory board types are available.

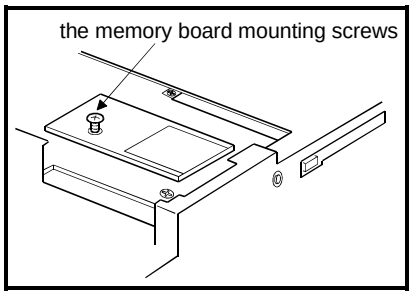
Type	Description	
A9GT-QFNB	Exclusively used for optional function OS storage	MELSEC-Q/QnA/A/FX Ladder monitor-compatible
A9GT-QFNB4M	For optional function OS storage + built-in memory extension, 4M byte	
A9GT-QFNB8M	For optional function OS storage + built-in memory extension, 8M byte	
A9GT-FNB	Exclusively used for optional function OS storage	MELSEC-A/FX Ladder monitor-compatible
A9GT-FNB1M	For optional function OS storage + built-in memory extension, 1M byte	
A9GT-FNB2M	For optional function OS storage + built-in memory extension, 2M byte	
A9GT-FNB4M	For optional function OS storage + built-in memory extension, 4M byte	
A9GT-FNB8M	For optional function OS storage + built-in memory extension, 8M byte	

6.4.2 Mounting procedure



1) Refer to [Section 6.2] and remove the slot cover.

2) Load the memory board into the memory board loading slot.



3) Tighten and fix the memory board mounting screws in the specified torque range.

4) Refer to [Section 6.2] and install the slot cover.

• When the memory board is used, the following ROM_BIOS version is required.

Type	Hardware Version	ROM_BIOS version of GOT	Software including ROM_BIOS	
			GT Works2 GT Designer2	GT Works GT Designer
A9GT-QFNB	A	Version H or later	SW1D5C-GTWK2-E version A or later SW1D5C-GTD2-E version A or later	SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version J or later
	Version B or later (March, 2002) *1	Version M or later		SW5D5C-GTWORKS-E version A or later SW5D5C-GOTR-PACKE version A or later
A9GT-QFNB4M	A	Version H or later		SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version J or later
A9GT-QFNB8M	A	Version J or later		SW5D5C-GTWORKS-E version A or later SW3D5C-GOTRE-PACK version A or later
A9GT-FNB	A	Version A or later		
A9GT-FNB1M	A	Version A or later		
	Version B or later (June, 2002) *1	Version M or later		
A9GT-FNB2M	A	Version A or later		
	Version B or later (June, 2002) *1	Version M or later		
A9GT-FNB4M	A	Version A or later		
	Version B or later (February,2002) *1	Version M or later		
A9GT-FNB8M	A	Version J or later		

*1: The A9GT-QFNB or A9GT-FNB1M/2M/4M of hardware version B cannot be used with the ROM_BIOS of version L or earlier.
When using it, install the ROM_BIOS of version M or later.

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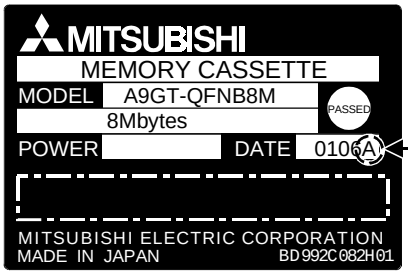
POINT

- The memory board hardware version is shown on the rating plate of the product.



- If a memory board of hardware version B or later is mounted in a GOT installed with ROM_BIOS version L or earlier, the following message will appear and the GOT will stop.

If the above message appears, upgrade the ROM_BIOS version by reference to the following manual.

- For GT Designer : GT Works Version□/GT Designer Version□ Reference Manual
- For GT Designer2 : GT Designer2 Version□ Operating Manual

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6.5 PC Card

Use PC cards for transferring OS and monitor screen data, and storing data with object functions such as alarm history function and recipe function.
For details of the OS and monitor screen data transmission, refer to the following manual.

- For GT Designer : GT Works Version□/GT Designer Version□ Reference Manual
- For GT Designer2 : GT Designer2 Version□ Operating Manual

For details of the alarm history function and recipe function, refer to the following manual.

- For GT Designer : GT Designer help function
- For GT Designer2 : GT Designer2 Version□ Reference Manual

6.5.1 PC card types

Compatible PC cards are shown below.

Type name	Remark	
—	Commercially available SRAM type PC card (based on JEIDA Ver4.2 (based on PCMCIA2.1))	
	Commercially available flash PC card (based on Compact flashTM ＊1) (＊1 Compact flashTM is a trademark of Sun Disk)	＊2 ＊3
A9GTMEM-10MF	Memory 16 Mbyte (hardware version D or later), flash PC card formatted	＊4
A9GTMEM-20MF	Memory 32 Mbyte (hardware version D or later), flash PC card formatted	＊5
A9GTMEM-40MF	Memory 64 Mbyte (hardware version G or later), flash PC card formatted	

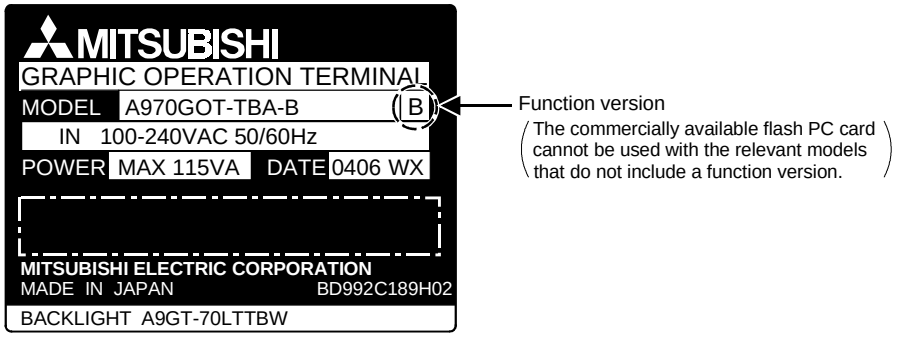
＊2: When using the compact flash PC card in the GOT, you need to fit a conversion adapter (compact flash ↔ Type II conversion adapter) to the compact flash PC card.

＊3: The commercially available flash PC card may be used only when the following conditions are satisfied. (A985 GOT-TBA-EU is incompatible with commercially available flash PC cards. A985GOT-V is compatible with commercially available flash PC cards, irrespective of the following conditions.)

Condition 1: Any of the following GOTs is used.

A985GOT-TBA,	A985GOT-TBD,
A975GOT-TBA(-B)(-EU),	A975GOT-TBD(-B),
A970GOT-TBA(-B)(-EU),	A970GOT-TBD(-B),
A970GOT-SBA(-EU),	A970GOT-SBD,
A970GOT-LBA(-EU),	A970GOT-LBD,
A960GOT-EBA(-EU),	A960GOT-EBD

Condition 2: The function version of the GOT used is version A or later.
Confirm the GOT function version on the rating plate at the rear of the GOT.


MITSUBISHI
GRAPHIC OPERATION TERMINAL
MODEL A970GOT-TBA-B B
IN 100-240VAC 50/60Hz
POWER MAX 115VA DATE 0406 WX
MITSUBISHI ELECTRIC CORPORATION
MADE IN JAPAN BD992C189H02
BACKLIGHT A9GT-70LTTBW
Function version
The commercially available flash PC card cannot be used with the relevant models that do not include a function version.

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*4: The flash PC card (A9GTMEM-10MF/20MF/40MF) can be used only when the following conditions are satisfied. (A985GOT-TBA-EU can work as a flash PC card, although incompliant with the EMC Directive.)

Condition 1:	Use the following GOT.			
	Hardware version A or later of			
	A985GOT-TBA(-V)(-EU),	A985GOT-TBD(-V),		
	A975GOT-TBA-B,	A975GOT-TBD-B,	A975GOT-TBA-EU	
	A970GOT-TBA-B,	A970GOT-TBD-B,	A970GOT-TBA-EU,	
	A970GOT-SBA-EU,			
	A970GOT-LBA(-EU),	A970GOT-LBD,	A960GOT-EBA-EU	
	Hardware version E or later of			
	A975GOT-TBA,	A975GOT-TBD,	A970GOT-TBA,	A970GOT-TBD,
	A970GOT-SBA,	A970GOT-SBD,	A960GOT-EBA,	A960GOT-EBD
Condition 2:	The ROM_BIOS version F or later of the GOT to be used.			

*5: Memory capacity differs according to the hardware versions of flash PC card. It can be checked on the rated plate of flash card.

POINT

For PC cards other than above, refer to the relevant document "List of valid devices applicable for GOT900 series"(Technical bulletin T10-0028).
Please contact your local Mitsubishi representative for the document, if necessary.
The GOT may not operate correctly if a PC card other than described in the document is used.
The document can be referred to from Mitsubishi Electric FA Network Service On World Wide, MELFANSweb homepage (http://www.nagoya.melco.co.jp/english/)

6.5.2 Battery replacement timing and method

This section provides a battery replacement method when the PC card used is the SRAM type.

(1) How to check for battery low

The GOT checks for a battery low of the memory card loaded. (Only when the memory card access switch is ON)

The battery low checking methods are given below.

1) Using the self-diagnostic function
   When a battery low occurs, the corresponding message appears on the self-diagnostic screen.
   For the details, refer to the GOT-A900 Series Operating Manual (Extended·Option Functions Manual).
2) Using the alarm list display (system alarm) function
   When a battery low occurs, the error warning message and battery low error code appear on the monitor screen.
   For the details, refer to the following Manual.
   - For GT Designer : GT Designer help function
   - For GT Designer2 : GT Designer2 Version□ Reference Manual

(2) Battery life

For the PC card backup time, refer to the instruction manual attached to the memory card used.

(3) Battery replacement

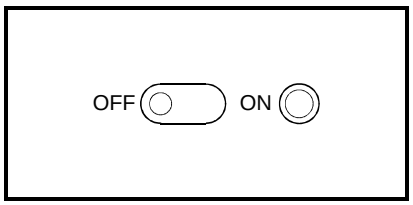
For the PC card battery replacement method, refer to the instruction manual attached to the memory card used.

POINT
This section does not apply to the flash PC card as it has no battery.

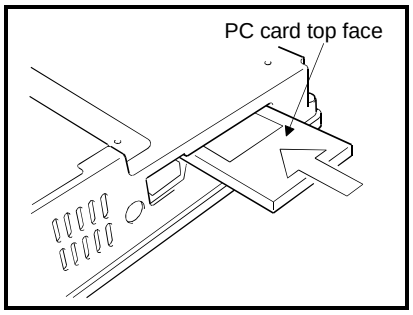
6.5.3 Loading and unloading procedures

Before loading/unloading a PC card while power is on, use the following procedure to enable loading/unloading of the PC card.

(1) Mounting

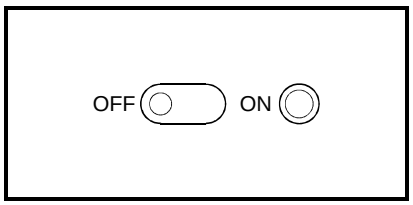


1) Set the memory card access switch of the GOT to "OFF" and make sure that the memory card LED goes off.
When the memory card LED goes off, the PC card can be loaded/unloaded while power is on.

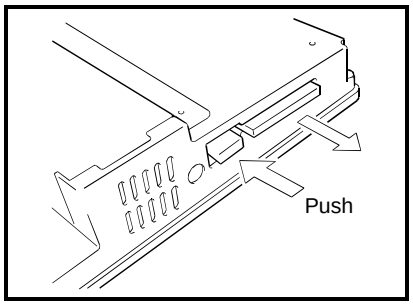


2) When loading the PC card into the GOT, insert and load it into the memory card interface with its top face up.

(2) Dismounting



1) Set the memory card access switch of the GOT to "OFF" and make sure that the memory card LED goes off.
When the PC card LED goes off, the memory card can be loaded/unloaded while power is on.

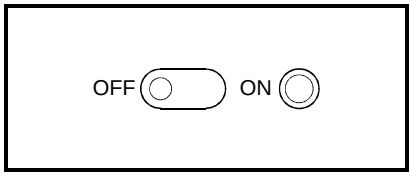


2) Remove the PC card after fully pushing the memory card ejection button of the GOT to eject the PC card.

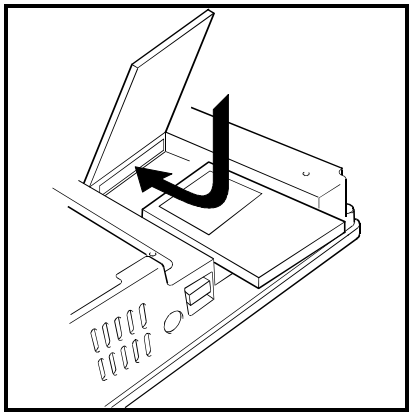
The following hardware versions have been improved so that less space is necessary for inserting/removing a memory card.
You can now open a cover of the memory card interface section to insert/remove it.

Item	Type	Hardware version
A975GOT	A975GOT-TBA(-B)	Version L (June, 2001) or later
	A975GOT-TBD(-B)	
	A975GOT-TBA-EU	Version E (July, 2003) or later
A970GOT	A970GOT-TBA(-B)	Version L (June, 2001) or later
	A970GOT-TBD(-B)	
	A970GOT-SBA	
	A970GOT-SBD	
	A970GOT-LBA	
	A970GOT-LBD	
	A970GOT-TBA-EU	Version E (July, 2003) or later
	A970GOT-SBA-EU	Version S (July, 2003) or later
	A970GOT-LBA-EU	Version L (July, 2003) or later
A960GOT	A960GOT-EBA	Version H (June, 2001) or later
	A960GOT-EBD	
	A960GOT-EBA-EU	Version V (August, 2002) or later

(1) Mounting

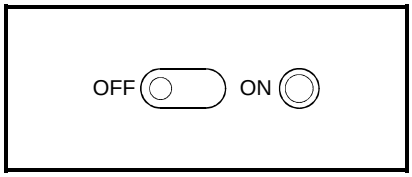


1) Set the memory card access switch of the GOT to "OFF" and make sure that the memory card LED goes off.
When the PC card LED goes off, the memory card can be loaded/unloaded while power is on.

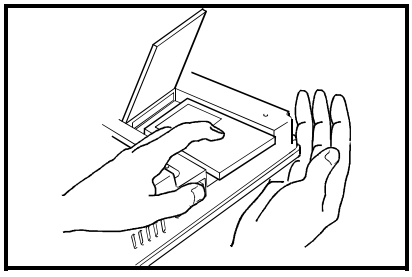


2) Open the memory card interface cover.
3) Insert the PC card into the memory card interface with the PC card facing up.
(Place a PC card on the memory card interface section of the GOT, and slide it in place.)

(2) Dismounting



1) Set the memory card access switch of the GOT to "OFF" and make sure that the memory card LED goes off.
When the PC card LED goes off, the memory card can be loaded/unloaded while power is on.



2) Open the memory card interface cover.
3) Remove the PC card after fully pushing the memory card ejection button of the GOT to eject the PC card.
The PC card may pop out when it is being removed, depending on the type of the PC card used. Be sure to support the card with your hand when removing it.

• You cannot open the cover of the memory card interface section when a communication unit is mounted on the GOT.

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6.6 Communication Board

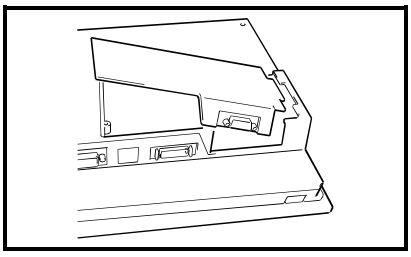
The communication board is used to make the GOT interface compatible with the system to be connected to.
For the details of the connection form, refer to the GOT-A900 Series User's Manual (Connection System Manual).

6.6.1 Connection board types

The following connection board types are available.

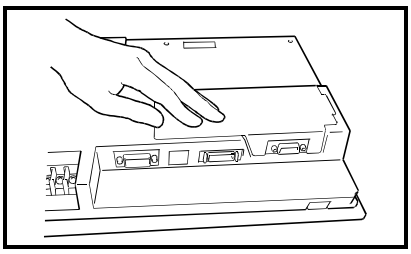
Type	Description
A9GT-QBUSS	For bus connection, small connector type (For QCPU (Q mode))
A9GT-QBUS2S	For multidrop bus connection, small connector type (For QCPU (Q mode))
A9GT-BUSS	For bus connection, small connector type (For A/QnA/Motion controller CPU)
A9GT-BUS2S	For multidrop bus connection, small connector type (For A/QnA/Motion controller CPU)
A9GT-RS4	For Direct connection to CPU/Computer link connection/Microcomputer connection and RS-422 connection (Without clock function)
A9GT-RS2	For Direct connection to CPU/Computer link connection/Microcomputer connection and RS-232C connection (Without clock function)
A9GT-RS2T	For Direct connection to CPU/Computer link connection/Microcomputer connection and RS-232C connection (Incorporating clock function)

6.6.2 Mounting procedure

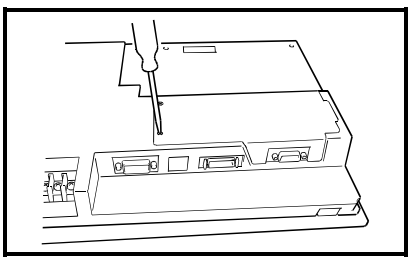


1) Refer to [Section 6.2] and remove the slot cover.

2) Insert the convex portion of the communication board into the concave portion of the GOT.



3) Securely press the communication board against the GOT.



4) Tighten and fix the mounting screws (2 pcs.) of the communication board in the specified torque range.

• When the communication board is used, the following software package is required.

Type	Compatible software package	
	GT Works2 GT Designer2	GT Works GT Designer
A9GT-QBUSS	SW1D5C-GTWK2-E version A or later SW1D5C-GTD2-E version A or later	SW5D5C-GTWORKS-E version A or later SW3D5C-GOTRE-PACK version C or later
A9GT-QBUS2S		
A9GT-BUSS		SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version A or later
A9GT-BUS2S		
A9GT-RS4		
A9GT-RS2		
A9GT-RS2T		SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version J or later

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6.7 Communication Unit

The communication unit is used to make the GOT interface compatible with the system to be connected to.
For the details of the connection form, refer to the GOT-A900 Series User's Manual (Connection System Manual).

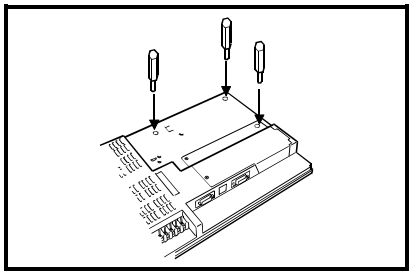
6.7.1 Connection unit types

The following connection unit types are available.

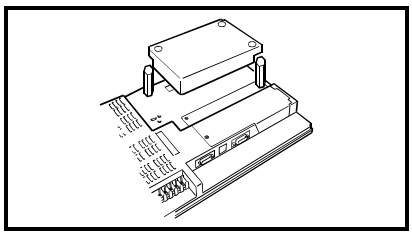
Type	Description
A9GT-BUSSU	For bus connection, small connector type (For A/QnA/Motion controller CPU)
A9GT-BUS2SU	For multidrop bus connection, small connector type (For A/QnA/Motion controller CPU)
A7GT-J71AP23	For MELSECNET(II) optical link connection, for use as local station
A7GT-J71AR23	For MELSECNET(II) coaxial link connection, for use as local station
A7GT-J71AT23B	For MELSECNET/B connection, for use as local station
A9GT-QJ71LP23	For MELSECNET/10 optical loop network connection, for use as normal station *1
A9GT-QJ71BR13	For MELSECNET/10 coaxial bus network connection, for use as normal station *1
A7GT-J71LP23	For MELSECNET/10 optical loop network connection, for use as ordinary station *1
A7GT-J71BR13	For MELSECNET/10 coaxial bus network connection, for use as ordinary station *1
A8GT-J61BT13	For CC-Link connection, for use as intelligent device station
A8GT-J61BT15	For CC-Link connection, for use as remote device station
A9GT-J71E71-T	For Ethernet connection

*1: When using the A9GT-QJ71LP23 or A9GT-QJ71BR13, the device range (QCPU, QnACPU, ACPU) that can be monitored varies with the communication driver installed in the GOT. When using the A7GT-QJ71LP23 or A7GT-QJ71BR13, only the AnA device range can be monitored. For details, refer to GOT-A900 series User's Manual (Connection System Manual).

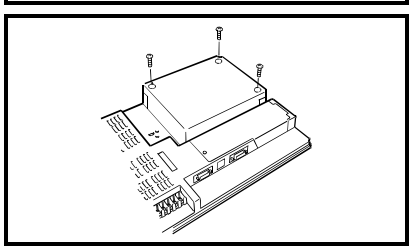
6.7.2 Mounting procedure



1) Fit the communication unit securing fixtures in the GOT.



2) Mount the communication unit on the GOT interface.



3) Tighten and fix the mounting screws (3 pcs.) of the communication unit in the specified torque range.

• When the communication unit is used, the following software package is required.

Type	Compatible software package	
	GT Works2 GT Designer2	GT Works GT Designer
A9GT-BUSSU	SW1D5C-GTWK2-E version A or later SW1D5C-GTD2-E version A or later	SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version A or later
A9GT-BUS2SU		
A7GT-J71AP23		
A7GT-J71AR23		
A7GT-J71AT23B		
A9GT-QJ71LP23	SW1D5C-GTWK2-E version K or later SW1D5C-GTD2-E version K or later	—
A9GT-QJ71BR13		
A7GT-J71LP23	SW1D5C-GTWK2-E version A or later SW1D5C-GTD2-E version A or later	SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version A or later
A7GT-J71BR13		
A8GT-J61BT13		
A8GT-J61BT15		
A9GT-J71E71-T		SW5D5C-GTWORKS-E version P or later * SW5D5C-GOTR-PACKE version P or later *

* When using the A9GT-J71E71-T of hardware version E or later, select the package of version 26C or later.
(Version P to Y is not applicable.)

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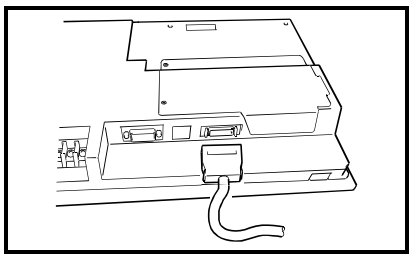
6.8 Printer

The printer is used to print the data and others of the alarm history and hard copy functions.
For details of the function, refer to the following manual.
• For GT Designer : GT Designer help function
• For GT Designer2 : GT Designer2 Version□ Reference Manual

6.8.1 Printer types

The printers having the following specifications (standard) have been concluded by Mitsubishi to be applicable for the GOT.
• ESC/P24-J84-compliant printer (ESC/P command-compatible, color-compatible)
• Hewlett Packard printers (PLC command compatible)

6.8.2 Connection procedure



1) Plug the GOT side connector of the printer cable to the printer interface at the bottom of the GOT.

2) Connect the GOT and printer by the printer cable.

6.9 Speech Output Device

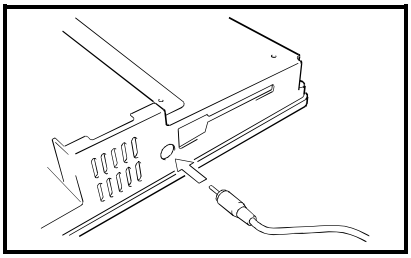
The speech output device is used to output voices with the speech output function.
For details of the sound function, refer to the following manual.

- For GT Designer : GT Designer help function
- For GT Designer2 : GT Designer2 Version□ Reference Manual

6.9.1 Speech output device type

A commercially available speaker compatible with the stereo mini-jack can be used as the speech output device.
The compatible file format is the Windows WAV file format (8.000kHz, 16 bit-monaural) and speech output is up to 8 seconds per file. (Speech output over 8 seconds is cut.)

6.9.2 Connection procedure



1) Insert and connect the stereo mini-jack of the commercially available speaker into the speech output terminal of the GOT.

6.10 Debug Stand

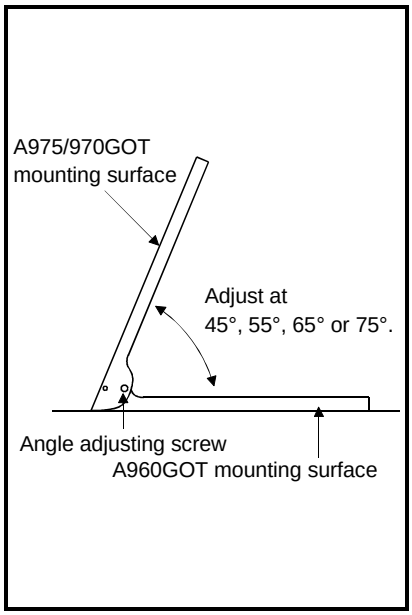
The debug stand is used to secure the GOT in a standing position so that the monitor screen data may be debugged easily.

6.10.1 Debug stand types

The following debug stand types are available.

Type	Description
A9GT-80STAND	Debug stand for A985GOT(-V)
A9GT-70STAND	Debug stand for A975/970/960GOT

6.10.2 Mounting procedure



1) Set the debug stand so that the GOT mounting surface will face the front.
   For the A9GT-70STAND,the applicable mounting surface changes with the GOT mounted.
   (The figure on the left shows that the A975/970GOT is mounted)

2) Adjust the GOT mounting angle with the angle adjusting screw of the debug stand.

3) Put the GOT into the front face of the debug stand and mount it on the debug stand with the mounting fixtures of the GOT.
   Refer to [Section 6.1.2] for the installation method using the mounting fixtures of the GOT.

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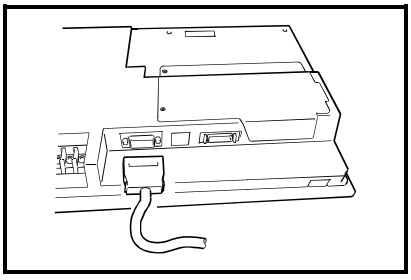
6.11 Bar Code Reader

The bar code reader is used to read and write data into the programmable controller CPU.
For details of the bar code function, refer to the following manual.
• For GT Designer : GT Designer help function
• For GT Designer2 : GT Designer2 Version□ Reference Manual

6.11.1 Bar code reader types

The following bar code readers have been concluded by Mitsubishi to be applicable for the GOT:
For bar code readers other than above, refer to the relevant document "List of valid devices applicable for GOT900 series"(Technical bulletin T10-0028).
Please contact your local Mitsubishi representative for the document, if necessary.
The GOT may not operate correctly if a bar code reader other than described in the document is used.
The document can be referred to from Mitsubishi Electric FA Network Service On World Wide, MELFANSweb homepage (http://www.nagoya.melco.co.jp/english/)

6.11.2 Connecting procedure



1) To the RS-232C interface that is provided on the lower part of the GOT, choose and connect one from the following: the connector for the bar code reader; the connector for the power supply module; and the connector on the GOT for the RS-232C cable. (The connecting method differs depending on the bar code reader used.)

- Please note that the bar code reader cannot be used if the GOT is connected to the MELSECNET/B or MELSECNET II.
- The power supply (5V DC) needs to be supplied from an AC-DC adapter or a corresponding power supply module to the bar code reader.
- The RS-232C cable needs to be prepared by the user.
  For details of preparations of the cable, please refer to the List of valid devices applicable for GOT900 series. (T10-0028)

6.12 External I/O Interface unit

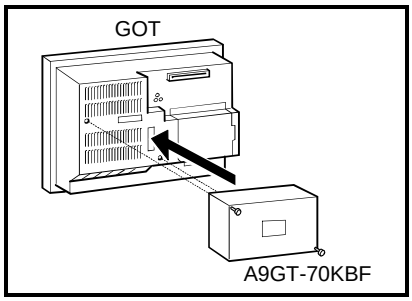
The external I/O Interface unit is connected with the ten-key panel (A8GT-TK) or keyboard to receive up to 8/64 points of inputs or provide up to 16 points of outputs.

6.12.1 External I/O Interface unit type

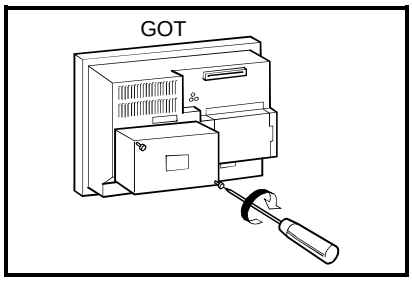
The following external I/O Interface unit is available.

Type	Description
A9GT-70KBF	External I/O Interface unit

6.12.2 Mounting procedure



1) Mount the external I/O Interface unit on the option Interface unit interface.



2) Tighten and fix the mounting screws (2 pcs.) of the external I/O Interface unit in the specified torque range.

• When the external I/O Interface unit is used, the following software package is required.

Type	Compatible software package	
	GT Works2 GT Designer2	GT Works GT Designer
A9GT-70KBF	SW1D5C-GTWK2-E version A or later SW1D5C-GTD2-E version A or later	SW5D5C-GTWORKS-E version A or later SW1D5C-GOTRE-PACK version C or later

• For details of the external I/O function, refer to the [A9GT-70KBF External I/O Module User's manual].

• For details of the operation panel function, refer to the following manual.
For GT Designer : GT Designer help function
For GT Designer2 : GT Designer2 Version□ Reference Manual

6.13 CRT Display, TFT Display (specific to A985GOT)

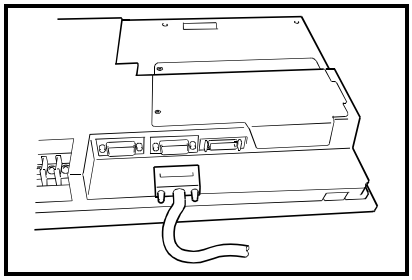
The CRT and TFT displays are connected with the A985GOT to show the monitor screen in any size.

6.13.1 CRT Display, TFT Display types

The following products of CRT and TFT displays are available.

Type		Description
CRT display	RD15M II	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION, 15inch 1280 × 1024
	RD17MX	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION, 17inch 1280 × 1024
	RDF19X	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION, 19inch 1600 × 1200
	RD19NF	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION, 19inch 1600 × 1200
TFT display	RDT150S	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION, 15inch 1024 × 768
	RDT180S	NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION, 18.1inch 1280 × 1024

6.13.2 Connecting procedure



1) Plug the GOT side connector of the CRT cable into the SVGA interface at the GOT bottom.

- The CRT cable may be fabricated by the user. Refer to the [3.2.1] for more information on the fabrication method.

6.14 Attachment

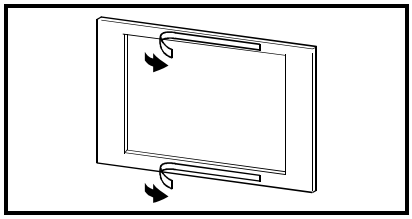
The attachment is used to upgrade from the A77GOT, GOT800 Series to the GOT-A900 Series.
Use of the attachment eliminates the necessity of additional machining to the installation hole in the control panel of the A77GOT, GOT800 Series.

6.14.1 Attachment types

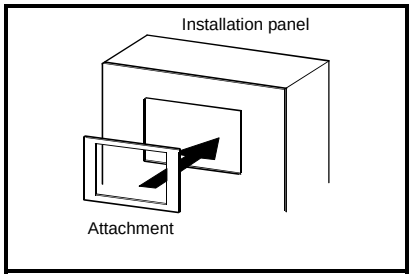
The following Attachment types are available.

Type	Model in use	Applicable model
A77GT-96ATT	A77GOT-L, A77GOT-L-S3, A77GOT-L-S5, A77GOT-CL, A77GOT-CL-S3, A77GOT-CL-S5	A960GOT
A87GT-96ATT	A77GOT-EL, A77GOT-EL-S3, A77GOT-EL-S5, A870GOT-EWS, A8GT-70GOT-EW, A8GT-70GOT-EB	A960GOT
A87GT-97ATT	A870GOT-SWS, A8GT-70GOT-SW, A8GT-70GOT-SB, A870GOT-TWS, A8GT-70GOT-TW, A8GT-70GOT-TB	A975/970GOT

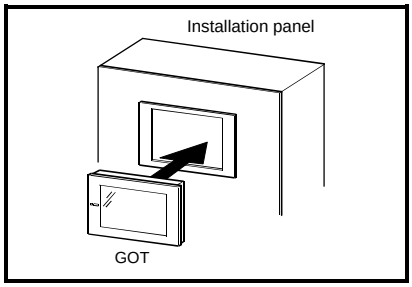
6.14.2 Mounting procedure



1) Peel off the two-sided tape from the rear surface of the attachment.



2) Install the attachment securely taking care so that it is positioned correctly in the installation panel mounting hole.
If the installation panel is dirty, the attachment may fall, causing injury.
Make sure to clean the installation panel by wiping it off before installation of the attachment.



3) Put the GOT in the attachment, and secure it within the specified torque using the mounting screws included with the GOT.

- The attachment is applicable for the installation panel with the plate thickness of 1.2 (0.05) to 3 mm (0.12 in).
  When the plate thickness exceeds 3 mm (0.12 in), the attachment is inapplicable for the GOT.
- When the attachment is used to replace the GOT, the GOT does not meet the requirements specified in the standards for water and dust resistance IP65f, IP67f and NEMA4.

6.15 Video/RGB Input Interface Unit (specific to A985GOT-V)

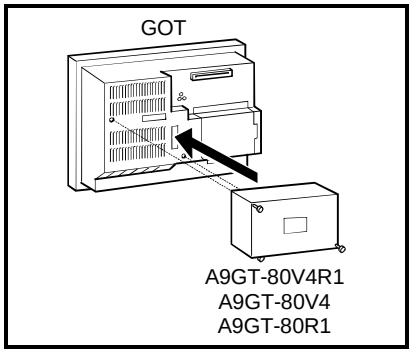
- Video/RGB hybrid interface unit
  The images taken by video cameras and the PC display can be displayed on the A985GOT-V.
- Video input interface unit
  The images taken by video cameras can be displayed on the A985GOT-V.
- RGB input interface unit
  The PC display can be displayed on the A985GOT-V.

6.15.1 Video/RGB input interface unit types

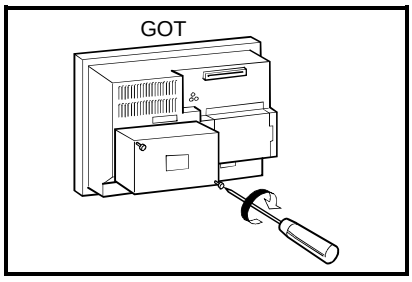
The following Video/RGB interface units are available.

Type	Description
A9GT-80V4R1	Video/RGB hybrid interface module unit
A9GT-80V4	Video input interface module unit
A9GT-80R1	RGB input interface module unit

6.15.2 Mounting procedure



1) Mount Video/RGB hybrid interface unit or the video/RGB interface unit on the option unit interface.



2) Tighten and fix the mounting screws (2 pcs.) of Video/RGB hybrid interface unit or the video/RGB input interface unit in the specified torque range.

- When the Video/RGB input interface unit is used, the following software package is required.

Type	Compatible software package	
	GT Works2 GT Designer2	GT Works GT Designer
A9GT-80V4R1	SW1D5C-GTWK2-E version A or later SW1D5C-GTD2-E version A or later	SW5D5C-GTWORKS-E version 26C or later SW5D5C-GOTR-PACKE version 26C or later
A9GT-80V4		SW5D5C-GTWORKS-E version F or later SW5D5C-GOTR-PACKE version F or later
A9GT-80R1		SW5D5C-GTWORKS-E version J or later SW5D5C-GOTR-PACKE version J or later

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- For details of the video input function and RGB input function, refer to the following manual.
  For GT Designer : GT Works Version□/GT Designer Version□ Reference Manual
  For GT Designer2 : GT Designer2 Version□ Reference Manual
- When using the A9GT-80V4R1 with the A985GOT-TBA-V, use the A985GOT-TBA-V of hardware version L (January, 2002) or later.

7 MAINTENANCE AND INSPECTION

This chapter explains the items which should be performed daily or periodically to use the GOT to its optimum.

7.1 Instructions for Maintenance and Inspection

The following instructions should be observed for maintenance and inspection.

DANGER

- When power is on, do not touch the terminals.
  Doing so can cause an electric shock or malfunction.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases.
  Not switching the power off in all phases can cause a unit failure or malfunction.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Before changing the backlight, always switch off the GOT power externally in all phases (when the GOT is connected to the bus, the PLC CPU power must also be switched off externally in all phases) and remove the GOT from the control panel.
  Not switching the power off in all phases may cause an electric shock.
  Not removing the unit from the control panel can cause injury due to a drop.

CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- When disposing of the product, handle it as industrial waste.
- While changing the backlight, do not touch the circuit boards and electronic parts of the GOT.
  Doing so can cause a failure or malfunction.
- When replacing the backlight, use the gloves.
  Otherwise, it may cause you to be injured.
  If you should directly touch the plated area of the main unit case with hand, be sure to wipe off the fingerprint and so on, and install the main unit case.
  Otherwise, it may cause a trouble or malfunction.
- Start changing the backlight more than 5 minutes after powering the GOT off.
  Not doing so can cause a burn due to the heat of the backlight.

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7.2 Daily Inspection

Daily inspection items are as follows.

Number	Inspection Item		Inspection Method	Criterion	Action
1	Unit mounting status		Check for loose mounting screws and disconnected cover	Securely mounted	Retighten screws
2	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose	Retighten terminal screws
		Proximate solderless terminals	Visual check	Proper intervals	Correct
		Loose connectors	Visual check	Not loose	Retighten connector fixing screws

7.3 Periodic Inspection

Inspection items to be checked once or twice in six months or one year are as follows. The following inspection should also be performed when equipment has been moved or modified or the wiring changed.

Number	Inspection Item		Inspection Method	Criterion		Action
1	Surrounding environment	Ambient temperature	Make measurement with thermometer or hygrometer Measure corrosive gas	Display section	0 to 40°C	For use in control panel, temperature inside control panel is ambient temperature
				Other portions	0 to 55°C	
		Ambient humidity		10 to 90%RH		
		Atmosphere		No corrosive gas		
2	Power supply voltage check		100 to 240VAC Measure voltage across terminals.	85AC to 242V		Change supply power
			24VDC Measure voltage across terminals	15.6DC to 31.2V		
3	Mounting status	Looseness	Move module	Should be mounted firmly		Retighten screws
		Dirt, foreign matter	Visual check	No dirt, foreign matter sticking		Remove, clean
4	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose		Retighten terminal screws
		Proximate solderless terminals	Visual check	Proper intervals		Correct
		Loose connectors	Visual check	Not loose		Retighten connector fixing screws

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7.4 Backlight for Liquid Crystal

The GOT uses a backlight for the liquid crystal of the display section.
The luminance of the back light lowers as it is used.
Change the backlight if the screen of the display section has become difficult to look at due to the reduced luminance of the backlight. (The screen save and back light OFF functions of the GOT are used to prolong the service life of the back light. For details, refer to the GOT-A900 Series Operating Manual (Extended·Option Functions Manual).)
The replacement backlight changes with the GOT type.
The backlights that may be used with the GOTs are as follows.

(1) Backlight applicable for A985GOT(-V)

Model	Version	Available backlight	Life span
A985GOT-TBA-V	Function version B (June, 2004) or later	A9GT-80LTTA	50,000h
	Function version None	A9GT-80LTTA, A9GT-80LTT	40,000h
A985GOT-TBD-V	Function version B (June, 2004) or later	A9GT-80LTTA	50,000h
	Function version None	A9GT-80LTTA, A9GT-80LTT	40,000h
A985GOT-TBA	Function version B (June, 2004) or later	A9GT-80LTTA	50,000h
	Function version A (June, 2004) or earlier	A9GT-80LTTA, A9GT-80LTT	40,000h
A985GOT-TBD	Function version B (June, 2004) or later	A9GT-80LTTA	50,000h
	Function version A (June, 2004) or earlier	A9GT-80LTTA, A9GT-80LTT	40,000h
A985GOT-TBA-EU	No restrictions on version	A9GT-80LTT	40,000h

(2) Backlight applicable for A975GOT

Model	Version	Available backlight *	Life span
A975GOT-TBA	Hardware version D (December, 1998) or later	A9GT-70LTTB	40,000h
	Hardware version C (December, 1998) or earlier	A9GT-70LTT	
A975GOT-TBD	Hardware version B (December, 1998) or later	A9GT-70LTTB	
	Hardware version A	A9GT-70LTT	
A975GOT-TBA-B	Function version B (January, 2004) or later	A9GT-70LTTBW	43,000h
	Function version A (October, 2000)	A9GT-70LTTB	40,000h
	Function version None		
A975GOT-TBD-B	Function version B (January, 2004) or later	A9GT-70LTTBW	43,000h
	Function version A (October, 2000)	A9GT-70LTTB	40,000h
	Function version None		
A975GOT-TBA-EU	No restrictions on version		

*: The above backlights are not interchangeable with each other. Therefore, select the backlight applicable for the GOT.

(3) Backlight applicable for A970GOT

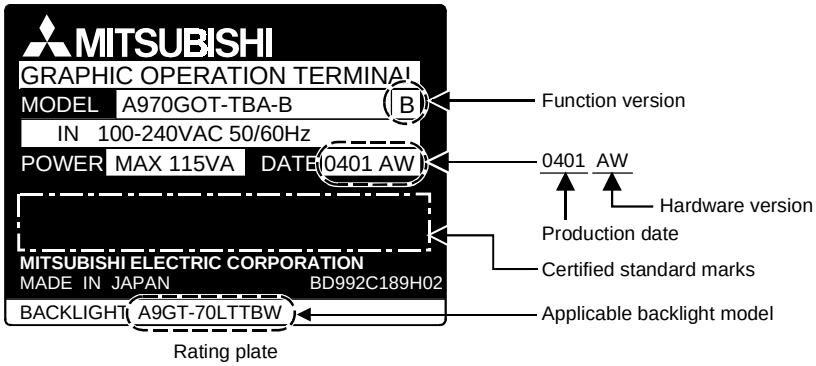
Model	Version	Available backlight *	Life span
A970GOT-TBA	Hardware version D (December, 1998) or later	A9GT-70LTTB	40,000h
	Hardware version C (December, 1998) or earlier	A9GT-70LTT	
A970GOT-TBD	Hardware version B (December, 1998) or later	A9GT-70LTTB	
	Hardware version A	A9GT-70LTT	
A970GOT-TBA-B	Function version B (January, 2004) or later	A9GT-70LTTBW	43,000h
	Function version A (October, 2000)	A9GT-70LTTB	40,000h
	Function version None		
A970GOT-TBD-B	Function version B (January, 2004) or later	A9GT-70LTTBW	43,000h
	Function version A (October, 2000)	A9GT-70LTTB	40,000h
	Function version None		
A970GOT-TBA-EU	No restrictions on version	A9GT-70LTS	40,000h
A970GOT-SBA			
A970GOT-SBD			
A970GOT-SBA-EU			
A970GOT-LBA			
A970GOT-LBD			
A975GOT-LBA-EU			

*: The above backlights are not interchangeable with each other. Therefore, select the backlight applicable for the GOT.

POINT

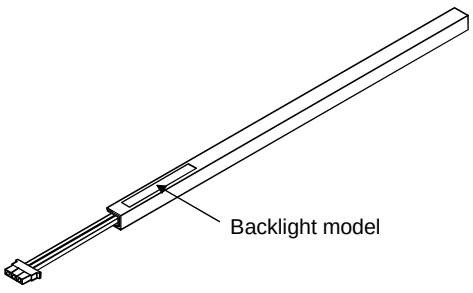
- The GOT hardware version, function version and applicable backlight model can be checked from the rating plate, which is situated on the backside of the GOT.

  <Example> A970GOT-TBA-B



Rating plate

- The A9GT-80LTTA/A9GT-70LTTBW backlight has the product model on it as shown below. Therefore, the model number can be checked easily from the top of the backlight.



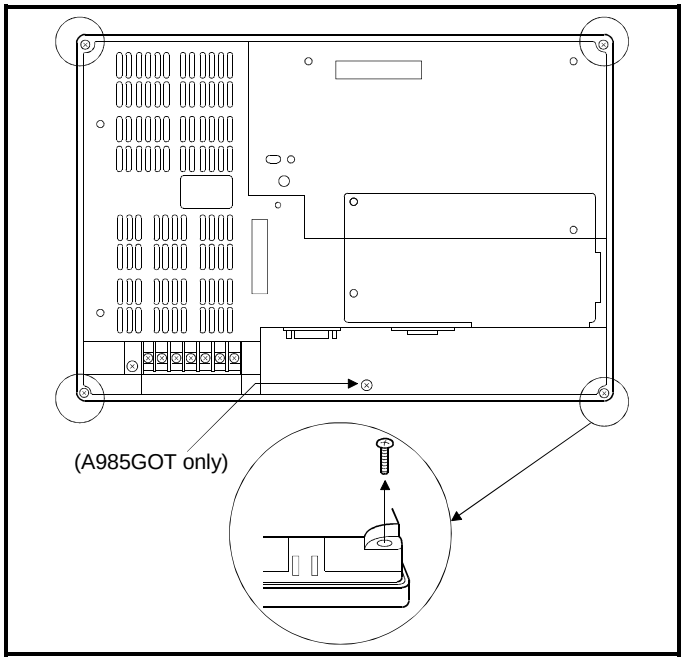
Backlight

7.4.1 How to change the backlight for liquid crystal

The backlight changing method changes depending on the hardware version of the GOT.
Change the backlight after confirming the hardware version of the used GOT.

Type	Hardware Version	Changing Method Reference Destination
A985GOT(-V)	Changing method is irrelevant to the hardware version	(1)
A97□GOT-TBA(-B)	Version K (May, 2001) or earlier, Version R (May, 2002) or later	
A97□GOT-TBD(-B)	Version K (May, 2001) or earlier, Version Q (May, 2002) or later	
A97□GOT-TBA(-B)	Version L (June, 2001) to Version Q (April, 2002)	(2)
A97□GOT-TBD(-B)	Version L (June, 2001) to Version P (April, 2002)	
A970GOT-SBA/LBA	Version K (May, 2001) or earlier, Version S (May, 2002) or later	(1)
A970GOT-SBD/LBD	Version K (May, 2001) or earlier, Version R (May, 2002) or later	
A970GOT-SBA/LBA	Version L (June, 2001) to Version R (April, 2002)	(2)
A970GOT-SBA/LBD	Version L (June, 2001) to Version Q (April, 2002)	

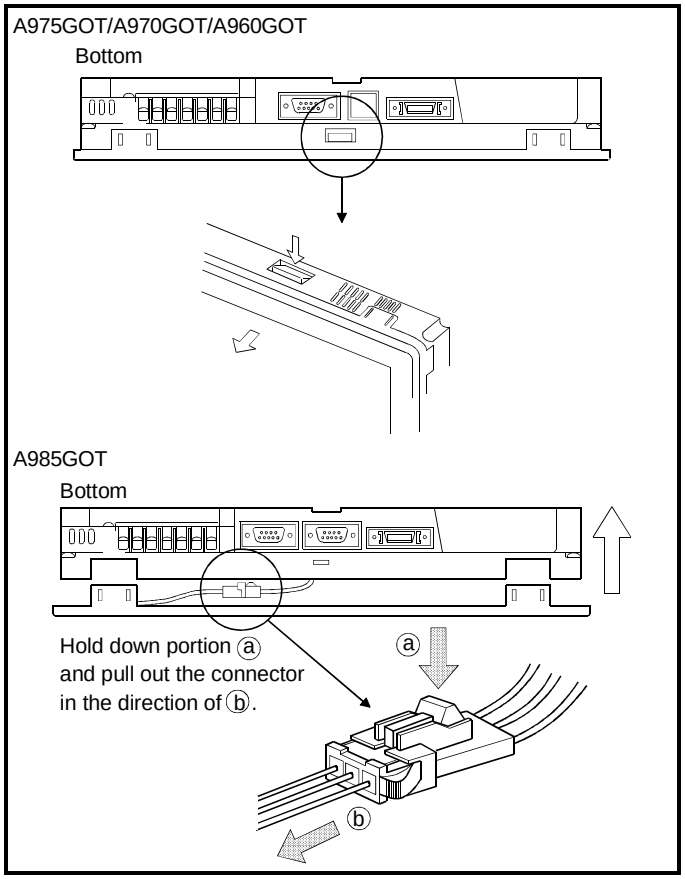
(1) Backlight replacement procedure 1



1) Turn the GOT's power off.
Remove the wire from the power supply terminal and also remove the communications cable.

2) After loosening the mounting fixtures of the GOT, remove the GOT from the control panel.

3) Remove the fixing screws (4 pcs.) in the back of the GOT with a screwdriver.
(When the GOT used is the A985GOT, remove 5 fixing screws.)



4) After removing the fixing screws, hold down the fixing catches (4 places at top, bottom, right and left) and remove the display cover from the GOT when the GOT used is the A975GOT/A970GOT/A960GOT.
Remove the display cover when the GOT used is the A985GOT(-V), as it has no fixing catches. At this time, remove the operator detect sensor junction connector in the GOT bottom.

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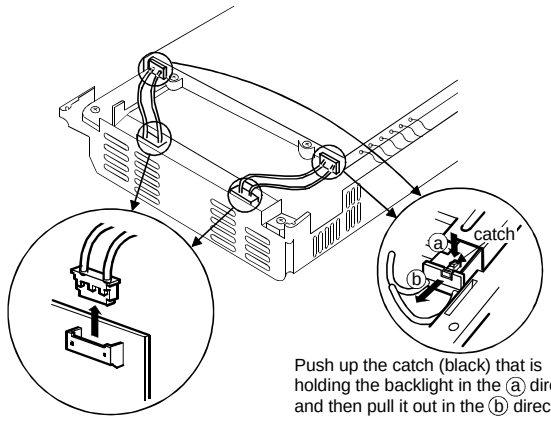
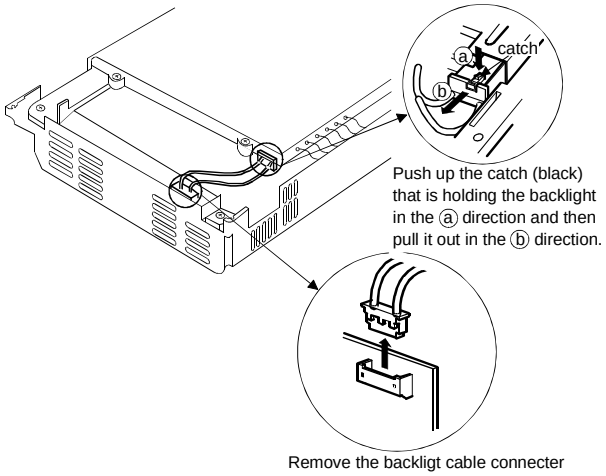
STN-type



Push up the catch (black) that is holding the backlight in the ⓐ direction and then pull it out in the ⓑ direction.

Remove the backligt cable connecter from the display section connector.

TFT-type



Push up the catch (black) that is holding the backlight in the ⓐ direction and then pull it out in the ⓑ direction.

Remove the backligt cable connecter from the display section connector.

5) Set the GOT front up and unplug the cable connector of the backlight from the connector of the display section.
Remove the connectors in two places at top and bottom of the display section for the STN, or the connector in one place at top for the TFT.

6) Remove the backlight from the display section.
Remove two backlights at top and bottom of the display section for the STN, or one at top for the TFT.

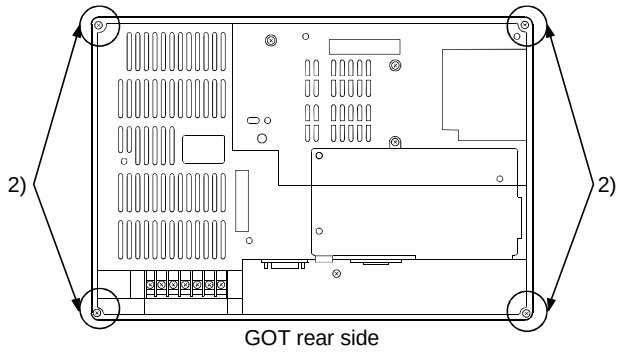
7) Fit a new backlight in the reverse procedure of removal.
To install the display section, please follow the procedure reverse to that for removing. Please make sure to install the display section securely and apply a torque within the torque range as specified to the fixing screws for the GOT.

[Disposal Instructions]

⚠ CAUTION
• To dispose of, please treat the back light as an industrial waste.

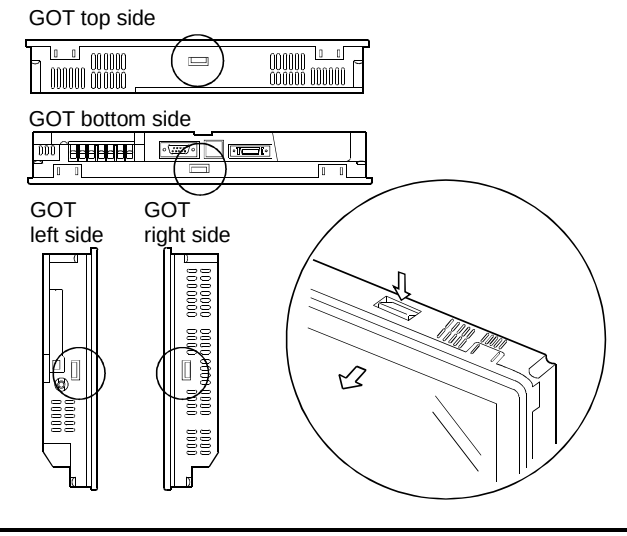
(2) Backlight replacement procedure 2

The screws, which are to be removed during backlight replacement, are different in size according to the mounting positions.
Be sure to store the screws by size after removing them.



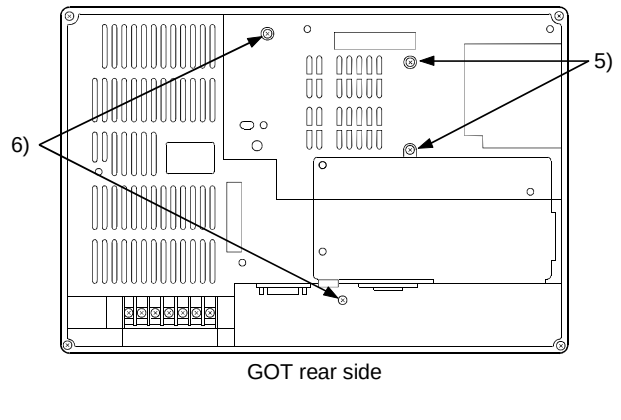
1) Remove the connector cover for RS-232C interface, printer interface or communication unit, if it has been mounted to the GOT.
Also, remove the wires connecting cable, various units or terminal block to the GOT, if the wiring has been installed.

2) Unscrew four fixing screws on the GOT rear side with a driver. (They cannot be completely removed.)
(Tightening torque range: 36 to 48N•cm)



3) Remove the display cover from the GOT while pressing four fixing tabs, which are situated on top/bottom/right/left sides of the GOT.

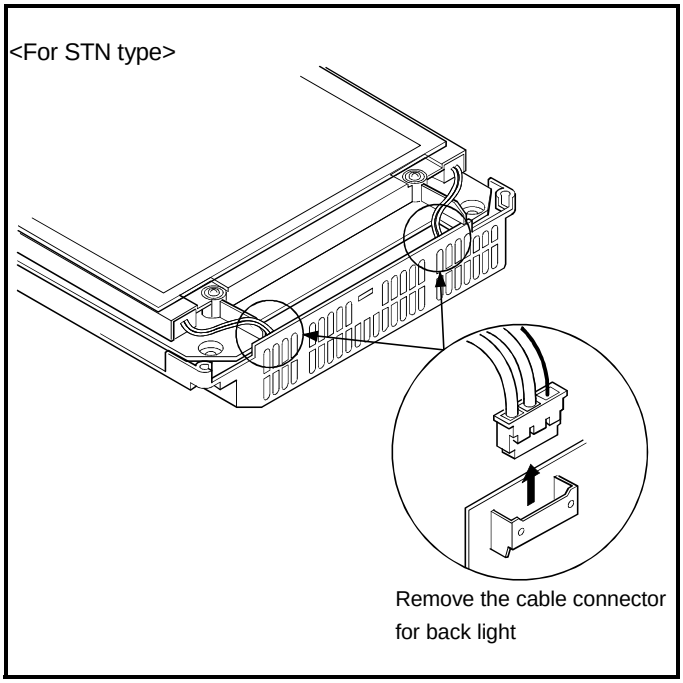
A flat cable is attached under the fixing tab on the top side of the GOT.
Take care not to apply excessive force on the fixing tabs while pressing them with a driver or similar device. Failure to observe this instruction may damage them.
Be sure not to apply excessive pressure on the GOT case, which is made of resin. Failure to observe this instruction may also damage them.



4) Put the GOT with the liquid crystal display side down. Keep the liquid crystal display away from scratch or dirt by laying a sheet on the work table in advance.

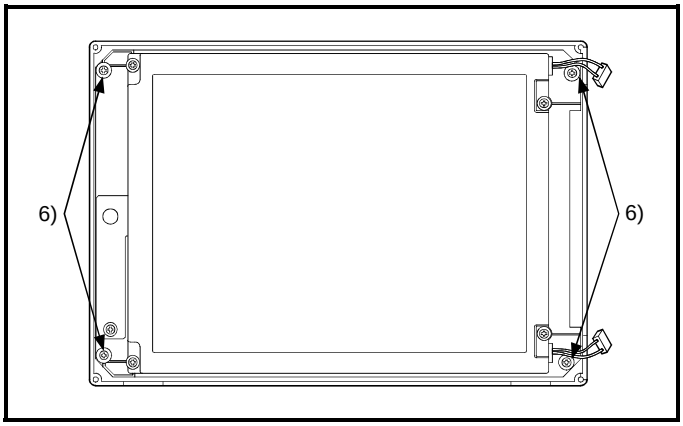
5) Remove two screws from the rear side.
((M2.6 screw)10 to 13N•cm)

6) Remove two screws from the rear side.
((M3 screw)18 to 24N•cm)
Please note that the screws are different in size.

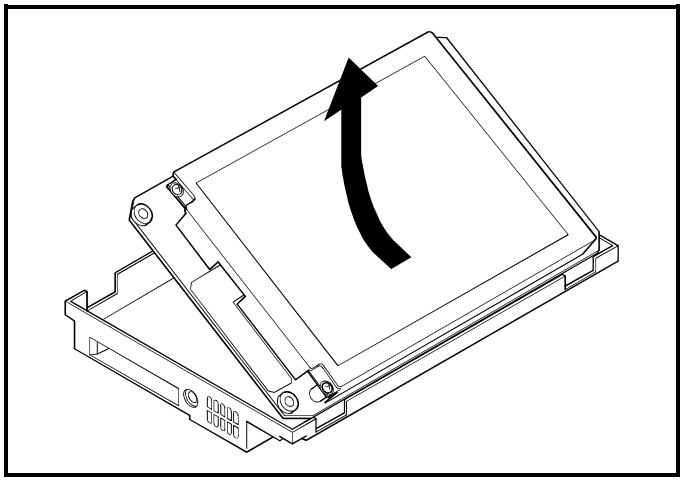


7) Put the GOT with the liquid crystal display side up and then remove the cable connector for backlight.

For A97□GOT-TB□ (-B):
Remove one connector on the top side.
For A970GOT-SB□, A970GOT-LB□:
Remove two connectors on the top and bottom sides.

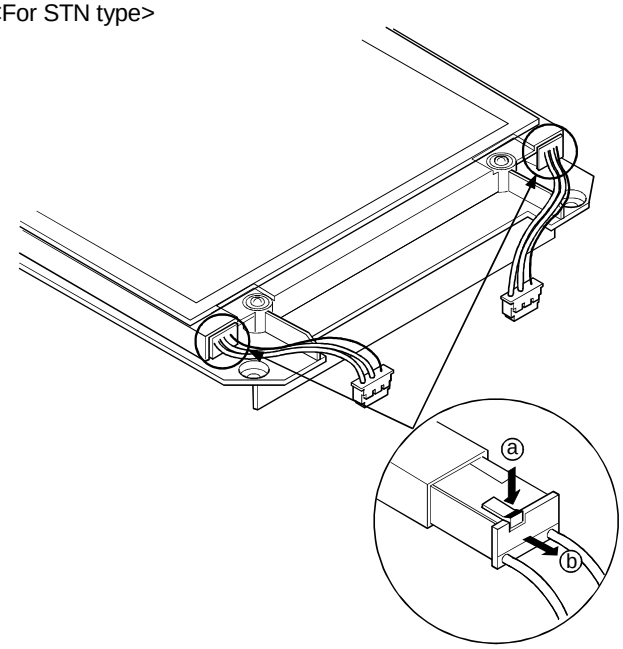


8) Remove four screws (chassis mounting screw) on the outmost side.
(Tightening torque range: 36 to 48N•cm)



9) Remove the liquid crystal display and circuit board from the rear case by holding up the top side.

<For STN type>



Pull out the backlight in ⓑ direction pressing the fixing tab (black) in ⓐ bdirection

10) Remove the backlights keeping the liquid crystal display up.
Keep the liquid crystal display away from scratch or dirt by laying a sheet on the work table in advance.

For A97□GOT-TB□ (-B) :
Remove one backlight on the top side.
For A970GOT-SB□, A970GOT-LB□ :
Remove two backlights on the top and bottom sides.

11) Mount new backlight(s) in the reverse order to the removal procedures.
Then, mount the liquid crystal display, circuit board and display cover in a reverse order as well.*1
Be sure to securely mount the liquid crystal display, circuit board and display cover, and tighten the fixing screws within the specified torque range.

*1: Pay full attention to the followings while mounting the liquid crystal, circuit board and display cover.
- Insert the GOT connectors and terminals into the corresponding holes on the rear case when mounting liquid crystal and circuit board onto it.
- Be sure to gently tighten the screws mentioned in 8) and 2), and then retighten them within the specified torque range.
- Insert the cable connectors for backlights completely, making sure that it is correctly mounted.
- Attach the display cover taking care that the flat cable is not wedged between the GOT and display cover.
- Remove the dust from the liquid crystal display or inside of the front panel.

[Disposal Instructions]

⚠ CAUTION
• To dispose of, please treat the back light as an industrial waste.

8 ERROR CODES AND ERROR MESSAGES

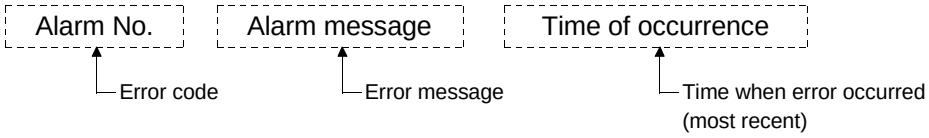
This chapter explains the error codes and error messages displayed by the alarm list (system alarm) display function of the monitoring functions.
The error codes may also be confirmed in the error code storage area of the system information function.
For details of the alarm list (system alarm) function and system information function, refer to the following manual.

- For GT Designer : GT Designer help function
- For GT Designer2 : GT Designer2 Version□ Reference Manual

8.1 Definition of the Error Codes and Messages Displayed

This section describes the definition of the error codes and error messages displayed on the monitor screen by the alarm list (system alarm) display function and the manuals to refer to.

(1) Display format on the monitor screen • • • Displayed in the user-set position



(2) Error codes and manuals to refer to

Source of Error Occurrence	Error Code	Reference
ACPU	0 to 199 (Value of D9008)	[User's Manual of ACPU where GOT is connected]
MNET/B, MNET(II)	200 to 299	[Data Link System Reference Manual of MNET(II), MNET/B] ＊1
GOT	300 to 499	[Section 8.2]
MNET/10	500 to 799	[Network System Reference Manual of MNET/10] ＊2
CC-Link	800 to 999	[CC-Link System Master · Local Module User's Manual] ＊3
QnACPU	1000 to 9999 (Value of SD0)	[User's Manual of QnACPU where GOT is connected]

＊1: Take action with reference to the section explaining the link special relay of the (error code)+9000.
For example, when the error of error code (210) has occurred, 210 + 9000 = 9210 and refer to the explanation of M9210 and take the corrective action.

＊2: Take action with reference to the section explaining the link special relay of the (error code) -500.
For example, when the error of error code (510) has occurred, 510 - 500 = 10 and refer to the explanation of SB000A and take the corrective action.
(Since the link special relay is in hexadecimal, replace a decimal by a hexadecimal.)

＊3: Take action with reference to the section explaining the link special relay of the (error code)-800.
For example, when the error of error code (910) has occurred, 910-800=110 and refer to the explanation of SB006E and take the corrective action.
(Since the link special relay is in hexadecimal, replace a decimal by a hexadecimal.)

＊4: The FXCPU has error codes 100 to 109 and displays the states of M8060 to M8069 with the error codes.
For example, when the error of error code (100) has occurred, refer to the explanation of M8060 and take the corrective action.

8.2 Error Code and Error Message List

(1) Error messages displayed before execution of monitoring

Error Message	Definition	Action
Check communication line. (Cable, driver, module)	The cable, installed communication driver or communication board/communication unit is faulty.	1. Check for any disconnected cable or improperly fitted communication board/communication unit. 2. Check the installed communication driver.
Check memory data.	Unauthorized combination of OS program versions installed.	Confirm the versions of the OS programs installed.

(2) Error codes and messages displayed during execution of monitoring

The error codes and messages detected by the GOT are indicated below.

Error Code	Error Message	Definition	Action
303	Too many monitor points specified	The number of objects set to the screen to be displayed is too many to reserve the work area of the system	Reduce the number of objects
304	Too many trigger points specified		
305	Too many print-out points specified	The number of objects set to the screen for print-out by the hard copy function is too many to reserve the work area of the system	
306	No monitor data	Screen data has not been downloaded to the built-in memory	Download the screen data to the built-in memory
307	No monitor device setting	Object monitoring devices not determined	Determine object monitoring devices
308	Specified comment not found or outside range	The comment number set for comment display does not exist or the comment file does not exist	Create the comment file and download it to the GOT
309	Device read error	Device data read caused an error	Correct device
310	Specified monitor data not found or outside range	(1) The specified base screen/window screen does not exist in the project data. (2) The specified base screen/window screen is outside the permissible range.	(1) Specify the existing base screen/window screen. (2) Specify the existing base screen/window screen.
311	More than 1024 alarms in alarm history	The alarms in the history has exceeded the largest number of points (1024 points) which the alarm history display function can monitor	Reduce the alarms in the alarm history (Remove the history recovered)
312	The collected time has exceeded upper limit	The collected time exceeded the upper limit when the following setting had been made for the scattered chart. "Store memory" "Accumulate/Average"	1. Establish "Clear trigger" set for the scattered chart. 2. Set "Operation at frequency over time" of the scattered chart for "Initialize and continue".
315	Device write error	Data write to device caused an error	Correct device
316	Operation result value cannot be displayed/entered	The data operation result has exceeded the range which can be represented by the device type	Reconsider the data operation formula so that the operation result does exceeded the range which can be represented by the device type
320	Specified part not found or outside range	The part number set for part display does not exist.	Confirm the part number specified for the part display in the screen data

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Error Code	Error Message	Definition	Action
321	Unauthorized station number specified for monitor device	The station number specified as a monitor destination does not exist or is not the station to be monitored	Confirm the monitor destination station number in the screen data
322	Specified device outside range	The device number to be monitored is outside the permissible range of the corresponding PLC CPU	Set the monitored PLC CPU and parameters to set the device in the monitorable range
323	Specified file register outside range		
324	AD51H-dedicated device used without AD51H	The AD51H-dedicated device was monitored in the system which does not use the AD51H	Incorporate the AD51H into the system or stop monitoring of the AD51H-dedicated device
325	Specified special module not loaded	The specified special module is not loaded	Check the loading status of the specified special module
330	PC card capacity short	The PC card does not have enough capacity	Check the capacity
331	PC card not loaded or memory card access switch OFF	The PC card is not loaded or the memory card access switch is OFF	1. Load the PC card 2. Turn ON the access switch
332	Format error	The PC card is not formatted	Format the PC card
333	PC card write-protected to disable write	The PC card is write-protected	Make the PC card write-enabled
334	PC card fault	PC card failure	Change the PC card
335	PC card battery voltage low	The battery voltage of the PC card is low	Change the battery of the PC card
340	Printer in error or power off	The printer is faulty or its power is not on	1. Check the printer 2. The Printer switch it on
341	Printer fault		
342	The fuse of KBF module was blown	A fault occurred in the external I/O interface unit.	1. If external power (24VDC) is not supplied, supply external power. 2. If external power is supplied, change the external I/O interface unit.
343	KBF module status is abnormal	The external I/O interface unit is not mounted properly.	Mount the external I/O interface unit properly.
345	BCD/BIN conversion error	It has been attempted to display/enter a value that cannot be BCD/BIN converted	1. Change the device data to be displayed into a BCD value 2. Enter the value of 4-digit integer
350	RS-232C communication error	The cable used to connect the GOT and personal computer is faulty	1. Check for an unplugged communication cable connector 2. check the cables used
351	Recipe file abnormal	Recipe file data are not normal	1. Check recipe file data in PC card 2. Start GOT after deleting recipe file in PC card
352	Recipe file generation error	Recipe file generation failed	Start GOT after loading PC card
353	Recipe file write disabled	Data write to recipe file failed	1. Check write protect of PC card 2. Check PC card capacity 3. Do not unload PC card during recipe operation
354	Error during recipe file write	Error occurred during recipe file write	Do not unload PC card during recipe operation
355	Error during recipe file read	Error occurred during recipe file read	1. Do not unload PC card during recipe operation 2. Check recipe file data (device values) in PC card

Error Code	Error Message	Definition	Action
356	File system error occurred in the PLC	When the file register name is designated and then the recipe function is operated, an error occurs in the designated file register.	1. Check the file register name, and then operate the recipe function again. 2. Apply Format PLC memory to the designated PLC drive with the GX Developer, and then operate the recipe function again.
357	The specified drive of PLC is abnormal	When the file register name is designated and then the recipe function is operated, there is a fault in the PLC drive.	1. Check the designated PLC drive, and then operate the recipe function again. 2. Apply Format PLC memory to the designated PLC drive with the GX Developer, and then operate the recipe function again.
358	File of PLC access failure	When the file register name is designated and then the recipe function is operated, the PLC file register could not be accessed.	1. Check the designated PLC drive/ file register name, and then operate the recipe function again (If drive 0 was designated, change to a different drive, and then operate the recipe function again). 2. Check whether the memory card is write-protected, and then operate the recipe function again.
359	Processing is from another peripheral device	When the file register name is designated and then the recipe function is operated, other peripheral devices begin processing for the file register.	Wait until the peripheral devices finish operating, and then operate the recipe function again.
360	Division error due to divisor of 0	Divisor 0 occurred in the data operation formula	Reconsider the data operation formula to avoid the divisor of 0
370	Contradiction in magnitude relationship of upper and lower limit values	Upper and lower limit values have been set as [upper limit ≤ lower limit]	Check the upper and lower limit value setting and correct them to be [upper limit ≥ lower limit]
402	Communication time-out	Time-out error occurred during communication	1. Check for any disconnected cable or improperly fitted communication board/communication unit 2. This may occur if the programmable logic controller load is increased while accessing another station. In this case, move the other station's data to the local station's programmable logic controller, and monitor with the local station. 3. If the sequence scan is long, insert a COM command.
403	SIO request status error	At the time of receive during RS-422/RS-232C communication, any of overrun error, parity bit error and framing error occurred.	Check the cable connection status, the communication board/communication unit mounting status, the PLC status, and the communication link transmission speed.
406	Specified station doesn't access for out of range	(1) The station number specified for CC-Link connection (via G4) is other than that of the master/local station. (2) Access was made to the CPU other than the QCPU.	Check the station number of the monitor screen data.
407	Other network accessed by MNET10 module	Access was made to the other network at the time of MELSECNET connection (network system)	Check the network number in the screen data to avoid access to the other network.
421	The specification of E71 cannot be written	The Ethernet module on the PLC side has been set for write disable.	Set the PLC side Ethernet module for write enable.
422	It is not communicate between the CPU and E71	The CPU is faulty or communication cannot be made between the CPU and PLC side Ethernet module.	Check the CPU for any fault using GX Developer or like. (Check the buffer memory.)

Error Code	Error Message	Definition	Action
423	Information is insufficient in network table	The station number set as the screen data does not exist in the Ethernet setting of GT Designer.	Add the station number set as the screen data to the Ethernet setting of GT Designer. (Use the station number of the PLC side Ethernet module set in the parameter setting of GX Developer.)
424	The same bureau is set by GOT and monitor data.	The station number set on the utility screen of the GOT is the same as the station number set in the Ethernet setting of GT Designer (station number of the PLC side Ethernet module) or the station number set as the screen data.	Check the following data and do not use the same station number. 1. Check the station number of the GOT on the utility screen of the GOT. 2. Check the station number set as the screen data. 3. Check the station number set in the Ethernet setting. (Use the station number of the PLC side Ethernet module set in the parameter setting of GX Developer.)
448	Devices outside file register and other ranges included	Devices specified are outside file register or buffer memory range of QnACPU	Set PLC file registers. Also correct monitor devices
470	Communication destination faulty	During monitoring of the other station via MELSECNET/10, a fault occurred in the corresponding communication station	Check whether the corresponding communication station has been set correctly in the management station (reconsider the parameters, switch setting, etc.)
499	CPU communication error	Other communication error	Check for any disconnected cable or improperly fitted communication unit

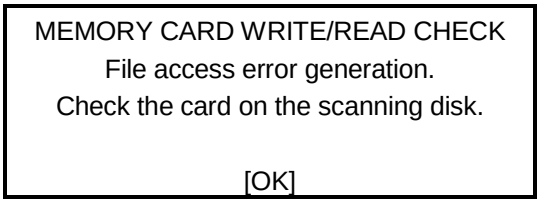
8.3 Precautions for use of flash PC card

Take the following action if any of the following errors takes place during use of the flash PC card (A9GTMEM-10/20/40MF).

Type	Description
PLC error number	332 Format error
	334 PC card fault
	351 Recipe fail abnormal
	352 Recipe fail generation error
	353 Recipe fail write disabled
	354 Error during recipe fail write
	355 Error during recipe file read
Utility/screen copy in execution	Data transfer error

(1) Take the action corresponding to the error. (Refer to Section 8.2.)

(2) Choose "UTILITY MENU"-"SELF CHECK"-"MEMCARD CHECK" on the GOT.
If the error is detected, the following dialog box appears.
For full information on the utility menu, refer to GOT-A900 Series Operating Manual (Extended·Option Functions Manual).



(3) When the above dialog box has appeared, perform scan disk on the personal computer.

POINT

Independently of whether the above error message is displayed or not, perform scan disk on the personal computer wherever possible.

8.4 Precautions for installation of ROM_BIOS

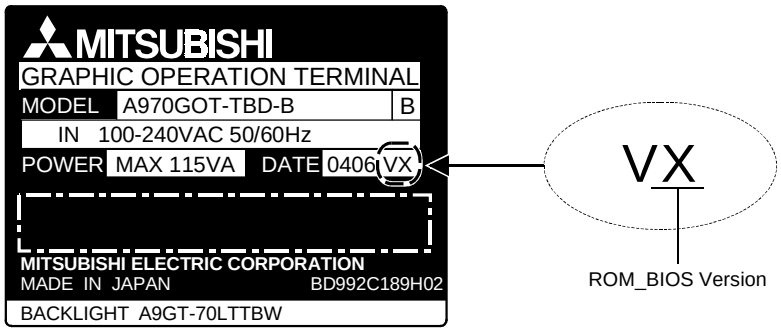
If the version of ROM_BIOS installed in the GOT is E or later at the time of product shipment, you need not install the older version of ROM_BIOS (ROM_BIOS version B, C or D). (The functions of the older versions are all reflected on the newer versions.) Should you restart the GOT in which the older version of ROM_BIOS has been installed, the following message appears and the GOT stops. (ROM_BIOS cannot be rewritten.)

```
ROM_BIOS setup Ver1. 1. 0 [B]
⚠ 注意：電源を切らないで下さい。
        ﾘｾｯﾄﾎﾞﾀﾝを押さないで下さい。
Don't turn off the power supply
Don't push the reset button.
ROM_BIOS Not Rewriterble.
GOT stopped
Please install operating system.
```

If the above message has appeared, install the basic functions, PC communication driver, etc. with the above screen being shown.

POINT

To confirm the version of ROM_BIOS installed in the GOT at the time of product shipment, look at the rating plate on the back of the GOT.



Rating plate

8.5 Troubleshooting in bus connection

If a cause cannot be located by the troubleshooting procedures specified in section 8.2 when the GOT is bus-connected to the PLC CPU, troubleshoot the cause as follows.

8.5.1 Locating error positions

(1) How to locate error positions:

(a) Use of peripheral devices

Using the peripheral devices such as GX Developer, check what type of the error occurs on the PLC CPU and, based on the error message on the PLC CPU and the check points (See item (2) below), check each module and cable for installation and earthing statuses.

(b) Error timing

Check the timing of errors.

1) An error occurs when the power is turned on or immediately after the PLC is reset:
The error may be detected by the initial processing of the PLC CPU.
In this case, because the faulty module may not be identified, use only an END instruction for the sequence program and remove the modules one by one until the error does not occur.
When the error is eliminated after a specific module has been removed, the module may be causing the error.

2) An error occurs after a specific operation or several seconds:
The error may occur in the sequence program. Check the error step where the error may occur and the sequence program in that step.
The sequence program can be diagnosed throughout by merely using an END instruction for the sequence program.

3) An error occurs when a specific device operates:
The mis-operation may be caused by noise.
Check that any signal line such as bus cable is not laid out too close to the operating device. If the line is too close to the device, separate the line 100 mm or more from the device.

(c) Locating the module where an error occurs:

Based on the PLC CPU error codes and special resister information (See item (2)), locate a specific module where an error occurs.

By the method stated above, correct the sequence program or replace the faulty module with a new one, and check whether the error occurs.
If the error continues to occur, it may have another cause.
Referring to section 8.5.2, locate the error position further.

(2) Error messages appearing due to faulty ACPU bus connection and measure against errors

Error Code	Error Messages	Check Timing	Cause and check point		Corresponding CPU
			Error detail	Remedy	
22	WDT ERR.	When an End instruction is executed	(1) The scanning time exceeds the calculation congestion monitoring time. (2) The scanning time may be extended by waiting for a response from an SP module that is down, and errors may occur simultaneously.	(1) Use the error history to check whether simultaneous occurrence errors are present. (2) Refer to the SP module down check points.	ACPU
31	UNIT VERIFY ERR.	When an End instruction is executed	The information stored in the cards of the module installed in the base unit and the communication unit of the GOT is different from that read at the initial time. (If an error occurs on a module (vacant) other than that installed in the base unit, the mis-operation may be caused by noise.)	Check the faulty module at special resisters D9116 to D9123. (1) Check that the module and the cables are connected correctly. (2) Check that the PLC and the GOT are earthed correctly.	
40	CONTROL_ BUS ERR.	During execution of FROM/TO instruction set	When the FROM/TO instruction is executed, an imprecise response is returned from the special function module (including the GOT).	Check the faulty module from the error step. (1) Check that the module and the cables are connected correctly. (2) Replace the faulty module with a new one. (3) Check that the PLC and the GOT are earthed correctly.	
		At CPU power ON/ At reset	At the time of initial communication, an imprecise response is returned from the special function module (including the GOT).	(1) Check that the module and the cables are connected correctly. (2) Because a faulty module cannot be located, remove the modules one by one until no CONTROL_BUS ERR. message appears to indicate the module where the error occurs. (Because the modules are removed, SP. UNIT ERR. message may appear. Stop transmitting the FROM/TO instruction to the applicable module.)	
41	SP. UNIT DOWN	During execution of FROM/TO instruction set	The special function module was accessed during the execution of a FROM/TO instruction set, but there was no response.	Check the faulty module from the error step. (1) Check that the module and the cables are connected correctly. (2) Replace the faulty module with a new one. (3) Check that the PLC and the GOT are earthed correctly.	
		At CPU power ON/ At reset	At the time of initial communication, a response is not returned from the special function module (including the GOT).	(1) Check that the module and the cables are connected correctly. (2) Replace the faulty module with a new one. (3) Check that the PLC and the GOT are earthed correctly.	
43	I/O INT ERR.	During interrupt	An imprecise interrupt occurs to the PLC CPU.		
44	SP. UNIT LAY ERR.	At CPU power ON/ At reset	Too many modules are installed (see the PLC CPU specification).	(1) Check the number of installed modules. (2) Check the number of extension stages and the I/O slot numbers.	
46	SP. UNIT ERR.	During execution of FROM/TO instruction set	The FROM/TO instruction is executed to any module other than the special function module.	(1) Review the sequence program. (2) Check the number of extension stages and the I/O slot numbers.	

(3) Error messages appearing due to faulty Q/QnACPU bus connection and measure against errors

Error Code	Error Messages	Check Timing	Cause and check point		
			Error detail	Remedy	Corresponding CPU
1310	I/O INT ERROR.	During interrput	An imprecise interrupt occurs to the PLC CPU.	(1) Check that the module and the cables are connected correctly. (2) Replace the faulty module and the cables with new ones. (3) Check that the PLC and the GOT are earthed correctly. (4) Check the number of extension stages and the I/O slot numbers.	QCPU QnACPU
1401	SP. UNIT DOWN	At CPU power ON/ At reset/When intelligent function module is accessed.	• There was no response from the intelligent function module during initial communications stage. • The size of the buffer memory of the intelligent function module is abnormal.		QCPU
		At CPU power ON/ At reset	At the time of initial communication, a response is not returned from the special function module (including the GOT).		QnACPU
1402		When an intelligent function module access instruction is executed.	The intelligent function module was accessed in the program, but there was no response.		QCPU
		During execution of FROM/TO instruction set	The special function module was accessed during the execution of a FROM/TO instruction set, but there was no response.		QnACPU
1403		When an End instruction is executed	• There was no response from the intelligent function module when the END instruction is executed. • An error is detected at the intelligent function module.		QCPU
1411	CONTROL_ BUS ERR.	At CPU power ON	At the time of initial communication, an imprecise response is returned from the special function module (including the GOT).	(1) Check that the module and the cables are connected correctly. (2) Because a faulty module cannot be located, remove the modules one by one until no CONTROL_BUS ERR. message appears to indicate the module where the error occurs. (Because the modules are removed, SP. UNIT ERR. message may appear. Stop transmitting the FROM/TO instruction to the applicable module.)	QCPU QnACPU
1412		During execution of FROM/TO instruction set	When the FROM/TO instruction is executed, an imprecise response is returned from the special function module (including the GOT).	Check the faulty module from the error step. (1) Check that the module and the cables are connected correctly. (2) Replace the faulty module with a new one. (3) Check that the PLC and the GOT are earthed correctly.	
2000	UNIT VERIFY ERR.	When an End instruction is executed	The information stored in the cards of the module installed in the base unit and the communication unit of the GOT is different from that read at the initial time. (If an error occurs on a module (vacant) other than that installed in the base module, the mis-operation may be caused by noise.)	Check the faulty module at special resisters SD1400 to SD1431. (1) Check that the module and the cables are connected correctly. (2) Check that the PLC and the GOT are earthed correctly.	QCPU QnACPU

Error Code	Error Messages	Check Timing	Cause and check point		
			Error detail	Remedy	Corresponding CPU
2100	SP. UNIT LAY ERR.	At CPU power ON/ At reset	(1) In the parameter I/O allocation settings, an intelligent function module was allocated to a location reserved for an I/O module. Or, the opposite has happened. (2) In the parameter I/O allocation settings, a module other than CPU (or nothing) was allocated to a location reserved for a CPU module. Or, the opposite has happened. (3) A general-purpose switch was set to the module with no general-purpose switches.	(1) Reset the parameter I/O allocation according to the status of installation of the intelligent function module. (2) Reset the parameter I/O allocation according to the status of installation of the CPU module. (3) Reset the general-purpose switch settings. (4) Check the number of extension stages and the I/O slot numbers.	QCPU
			In parameter I/O allocation settings, a special function module was allocated to a location reserved for an I/O module. Or, the opposite has happened.	(1) Reset the parameter I/O allocation setting to conform with the actual status of the special function modules. (2) Check the number of extension stages and the I/O slot numbers.	QnACPU
2101 to 2103			The modules more than those specified in the PLC CPU specification are installed.	(1) Check the number of installed modules. (2) Check the number of extension stages and the I/O slot numbers.	QCPU QnACPU
2104			At the MELSECNET/MINI auto refresh parameter settings, the module allocation that was set is different from the actual module models at the station numbers in the link system.	Reset the parameter MELSECNET/MINI auto refresh unit module allocation setting so that it conforms to the station number of the module that is actually linked.	QnACPU
2105			There are too many special function modules that can use dedicated instructions allocated (number of modules installed).	Reduce the number of special function modules installed.	
2106			(1) 5 or more QJ71LP21/BR11 have been installed. (2) 5 or more QJ71E71 (-B2) have been installed. (3) Identical network numbers or station numbers exist in the MELSECNET/10 network system.	(1) Keep the number to 4 or fewer. (2) Keep the number to 4 or fewer. (3) Check the network numbers and station numbers.	QCPU
2107			Head X/Y set at the parameter I/O allocation settings is also the head X/Y for some other module.	(1) Reset the parameter I/O allocation setting to conform with the actual status of the special function modules. (2) Check the number of extension stages and the I/O slot numbers.	QCPU QnACPU
2108			(1) Network module A1SJ71LP21, A1SJ71BR11, A1SJ71AP21＊, A1SJ71AR21, or A1SJ71AT2＊B dedicated for the A2USCPU has been installed. (2) Network module A1SJ71QLP21 or A1SJ71QBR11 dedicated for the Q2AS has been installed. Change the network module to QJ71LP21 or QJ71BR11.	Change network module to QJ71LP21 or QJ71BR11.	QCPU
			AJ71LP21 or AJ71BR11 for use with the AnUCPU network module has been installed.	Change network module to AJ71QLP21 or AJ71QBR11.	QnACPU
2109			The control system and standby system module configurations are different when a redundant system is in the backup mode.	Check the module configuration of the standby system.	Q4ARCPU

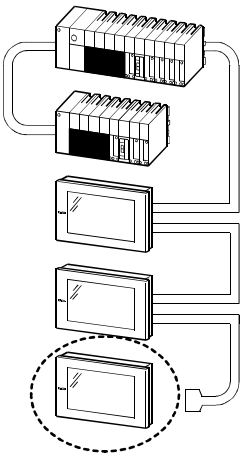
Error Code	Error Messages	Check Timing	Cause and check point		
			Error detail	Remedy	Corresponding CPU
2110	SP. UNIT ERROR.	When instruction executed	The FROM/TO instruction is executed to any module other than the special function module.	(1) Review the sequence program. (2) Replace the faulty module with a new one.	QCPU QnACPU
2111			The location designated by link direct device (J□\□) is not a network module.		
2112		When instruction executed/ STOP → RUN	(1) The location designated by a special function module dedicated instruction is not a special function module. (2) Alternatively, it is not the relevant special function module.	Review the sequence program.	
2113			No special function module data for simulation purposes has been set in the simulation data.	Read error individual information, then check and edit the special function module simulation data that corresponds to the numerical value there (program error location).	
2120	SP. UNIT LAY ERR.	At CPU power ON/ At reset	The location of Q□B and QA1S□B is improper.	Check the location of the base unit.	QCPU
2122			QA1S□B is installed to the basic base unit.	Install Q□B as the basic base unit.	
2124			(1) A module is installed at 65th or later slot. (2) A module is installed at the slot later than the number of slots specified with base allocation setting. (3) A module is installed at the I/O points later than the 4,096th point. (4) A module installed at the 4,096th point occupies later points.	(1) Remove the module installed at 65th or later slot. (2) Remove the module installed at the slot later than the number of slots specified with base allocation setting. (3) Remove the module installed at the I/O points later than the 4,096th point. (4) Change the last module to a module which does not exceed the 4,096th point.	
2125			(1) A module which the QCPU cannot recognize has been installed. (2) There was no response form the intelligent function module.	(1) Install a module which can be used with the QCPU. (2) Replace the faulty module with a new one.	
5000	WDT ERROR.	Always	Program scan time for initial execution type program goes over the initial execution WDT time set in the parameter PC RAS settings.	Read the error individual information at a peripheral device, check the numerical value (time) there, and shorten scan time if necessary.	QCPU QnACPU
5001			Program scan time goes over the WDT value set in the parameter PC RAS settings.		

8.5.2 Further locating error positions

If the function of the PLC cannot be recovered even when the module on which an error occurs is replaced with a new one, the error may be caused by the effect from another module.
Disconnect the extension cables and bus connection cables in order from the modules starting from the module located furthest from the operating position in the system, and check for the status of occurrence of the error each time the cables are disconnected until the error does not occur.
The module or extension cables/bus-connection cables disconnected immediately before the error does not occur are considered to cause the error.
Examples of the ways of further locating error positions are shown below.

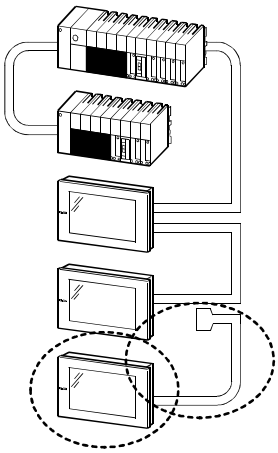
Example 1:

Turn off the power of the GOT.
↓
Turn off the power of the PLC CPU.
↓
Disconnect the bus-connection cable (IN side) from the final stage GOT.
↓
Turn on the power of the PLC CPU.
↓
Reset the PLC CPU.
↓
Turn on the power of the GOT.
↓
If an error does not occur, the final stage GOT may be faulty.



Example 2:

Turn off the power of the GOT.
↓
Turn off the power of the PLC CPU.
↓
Disconnect the bus-connection cable (OUT side) from the GOT located one stage before the final stage.
↓
Turn on the power of the PLC CPU.
↓
Reset the PLC CPU.
↓
Turn on the power of the GOT.
↓
If an error does not occur, the final stage GOT and the bus-connection cable before the final stage may be faulty.



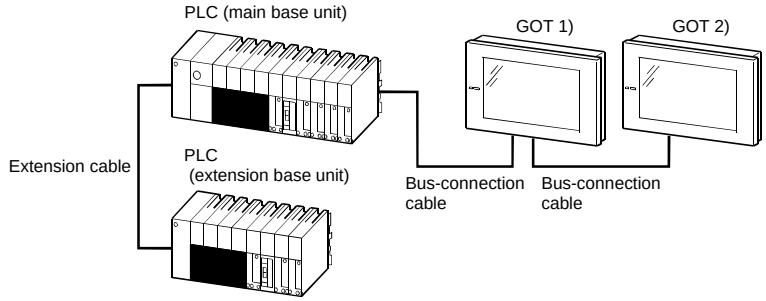
Repeat the examples 1 and 2 above to locate error positions.

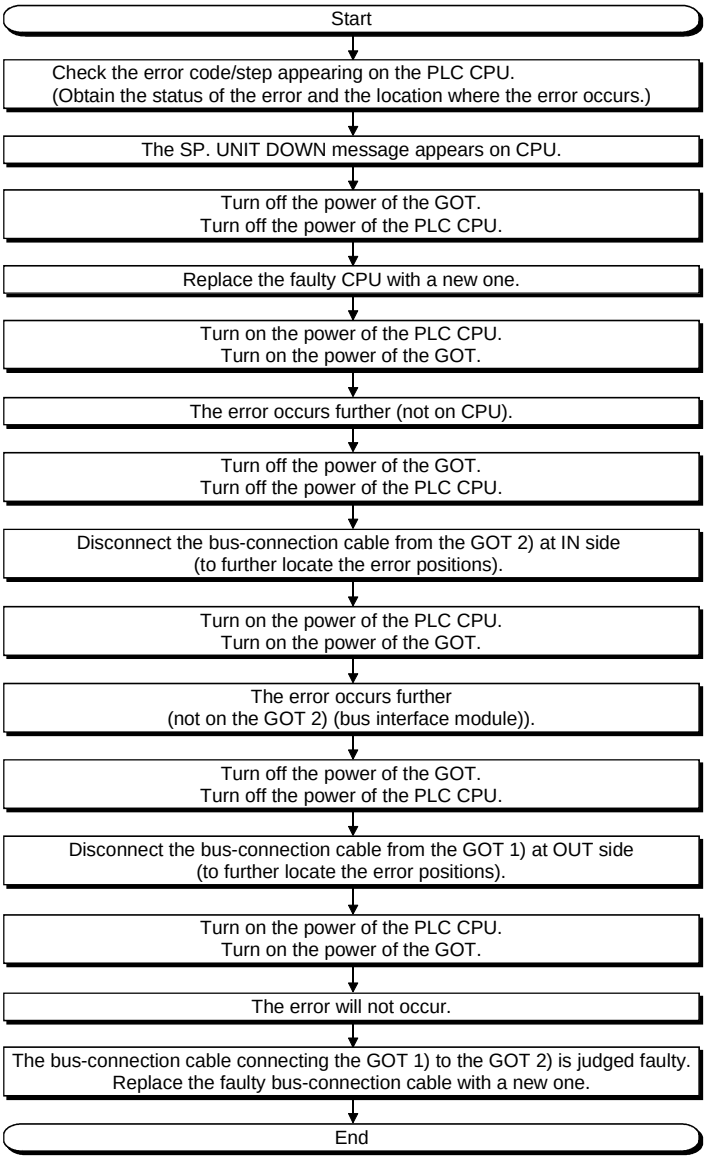
POINT

- When disconnecting the extension base units in order, use only an END instruction for the sequence program, and any error resulting from the sequence program will not occur, and the status of occurrence of errors will be obtained easily.
- When the frequency of occurrence of an error is low, check the error by taking a rather long time with the modules disconnected.
- The checks stated above are effective to locate a noise invading route when the mis-operation is caused by noise.

8.5.3 Specific example of troubleshooting

An example of troubleshooting the system which is used when an error occurs on the PLC CPU is shown below.




Start
Check the error code/step appearing on the PLC CPU.
(Obtain the status of the error and the location where the error occurs.)
The SP. UNIT DOWN message appears on CPU.
Turn off the power of the GOT.
Turn off the power of the PLC CPU.
Replace the faulty CPU with a new one.
Turn on the power of the PLC CPU.
Turn on the power of the GOT.
The error occurs further (not on CPU).
Turn off the power of the GOT.
Turn off the power of the PLC CPU.
Disconnect the bus-connection cable from the GOT 2) at IN side
(to further locate the error positions).
Turn on the power of the PLC CPU.
Turn on the power of the GOT.
The error occurs further
(not on the GOT 2) (bus interface module)).
Turn off the power of the GOT.
Turn off the power of the PLC CPU.
Disconnect the bus-connection cable from the GOT 1) at OUT side
(to further locate the error positions).
Turn on the power of the PLC CPU.
Turn on the power of the GOT.
The error will not occur.
The bus-connection cable connecting the GOT 1) to the GOT 2) is judged faulty.
Replace the faulty bus-connection cable with a new one.
End

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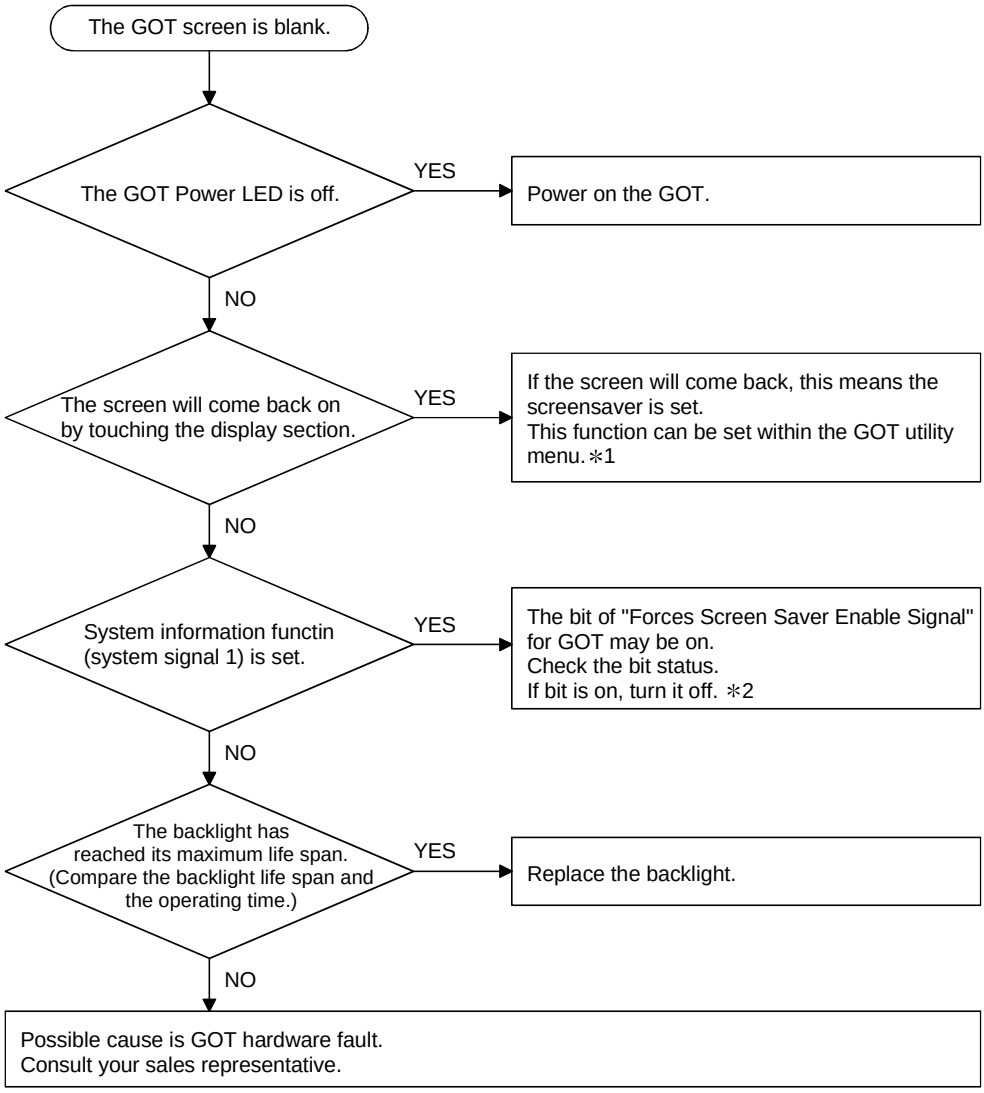
8.6 Troubleshooting for monitoring

The following describes the corrective action when the GOT monitoring screen is blank.


The GOT screen is blank.
The GOT Power LED is off.
YES
Power on the GOT.
NO
The screen will come back on by touching the display section.
YES
If the screen will come back, this means the screensaver is set.
This function can be set within the GOT utility menu. ∗1
NO
System information functin (system signal 1) is set.
YES
The bit of "Forces Screen Saver Enable Signal" for GOT may be on.
Check the bit status.
If bit is on, turn it off. ∗2
NO
The backlight has reached its maximum life span. (Compare the backlight life span and the operating time.)
YES
Replace the backlight.
NO
Possible cause is GOT hardware fault.
Consult your sales representative.

∗1: Refer to GOT-A900 Series Operating Manual (Extended • Option Functions Manual), for utility menu.

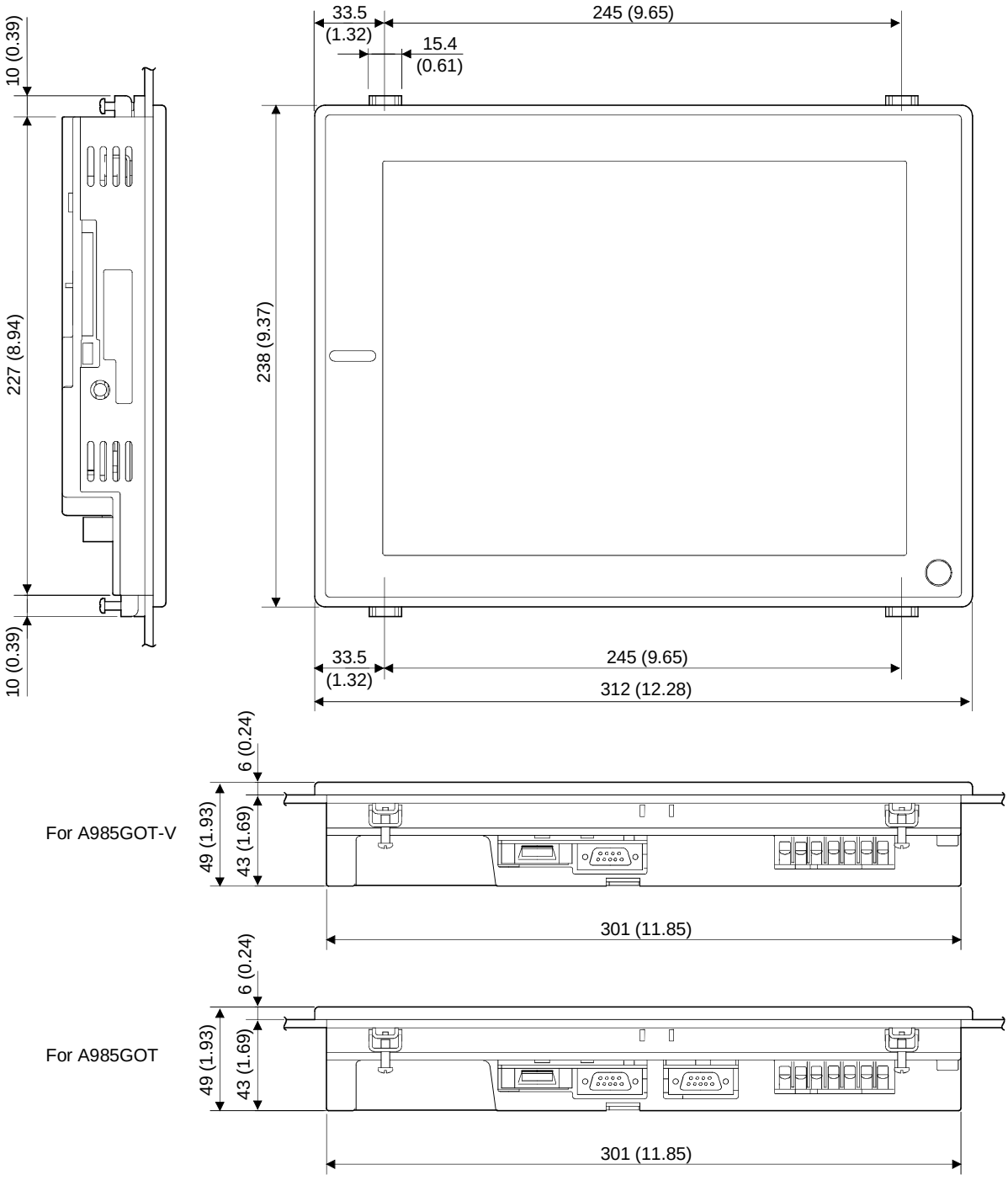
∗2: For details of the Forced Screen Saver Enable signal, refer to the following manual.

- For GT Designer : GT Designer help function
- For GT Designer2 : GT Designer2 Version □ Reference Manual

APPENDICES

Appendix 1 External Dimensions

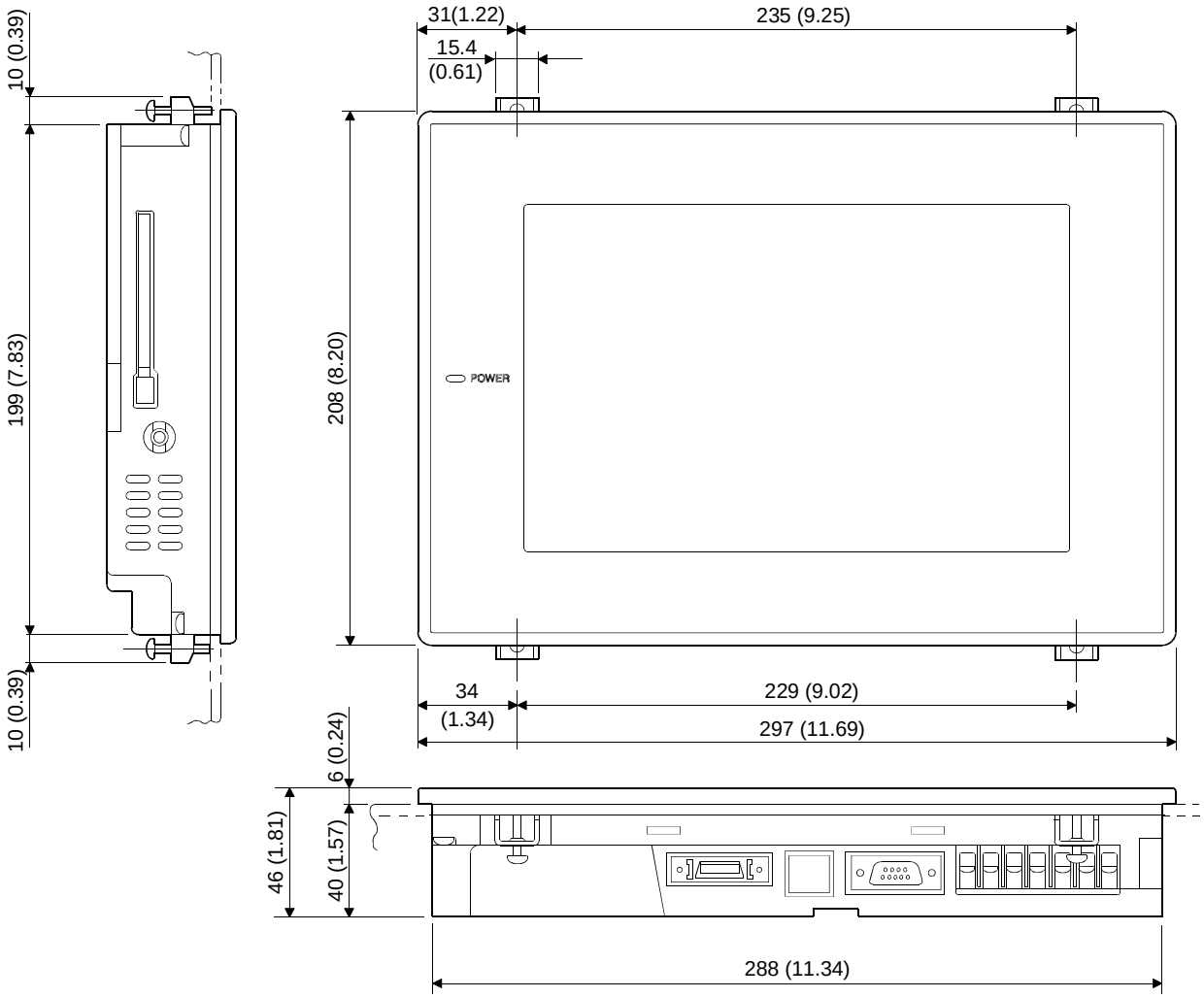
1) A985GOT(-V)



Unit (mm (inch))

App

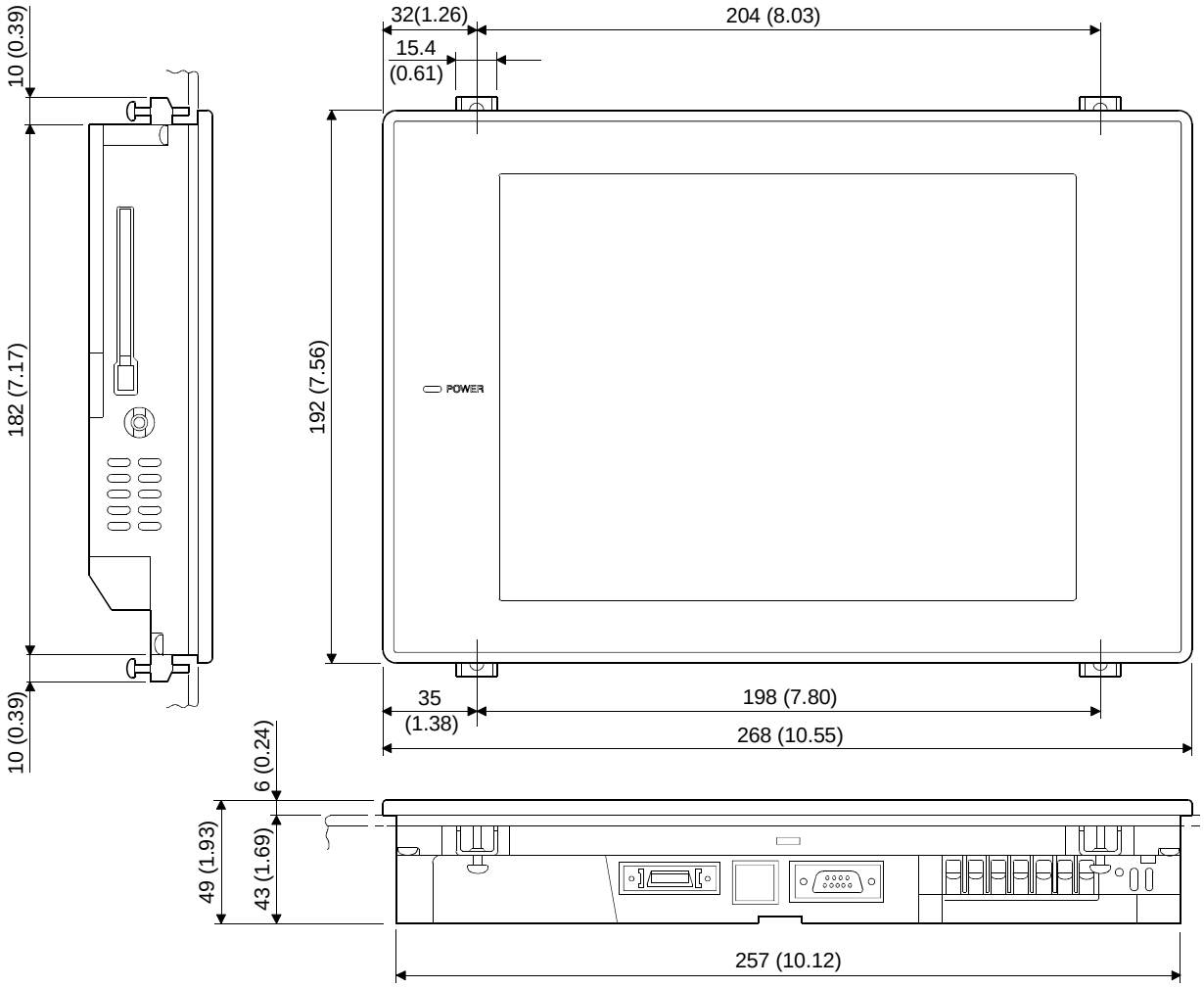
2) A975GOT and A970GOT



Unit (mm (inch))

App

3) A960GOT

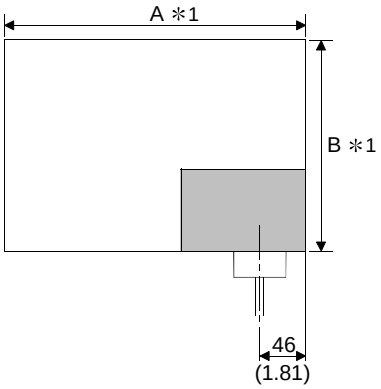
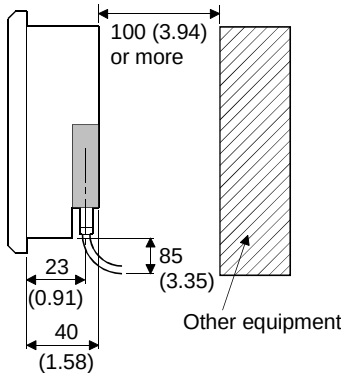
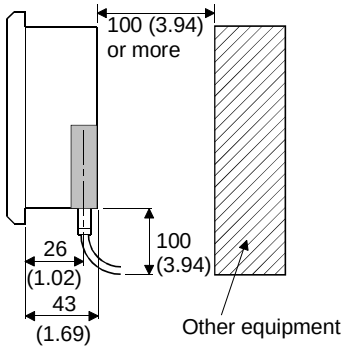


Unit (mm (inch))

APP - 3

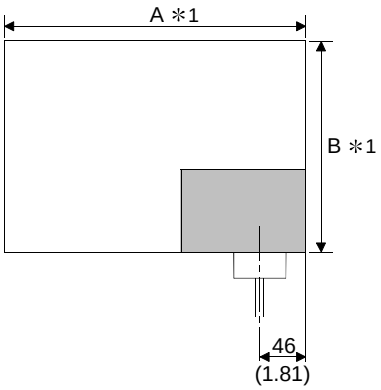
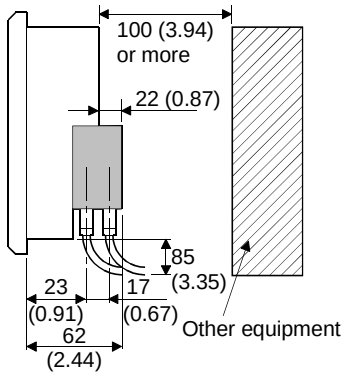
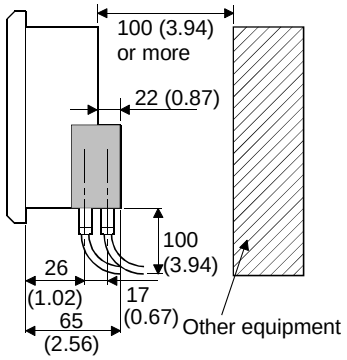
Appendix 2 Depth at the Time of Communication Board/Communication Unit Loading

(1) When A9GT-QBUSS/A9GT-BUSS is used

GOT rear	GOT side	
	For A975GOT, A970GOT [mm (inch)]	For A985GOT(-V), A960GOT [mm (inch)]
		

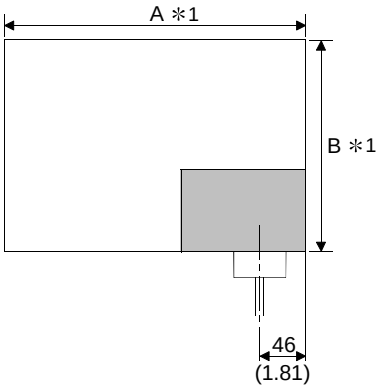
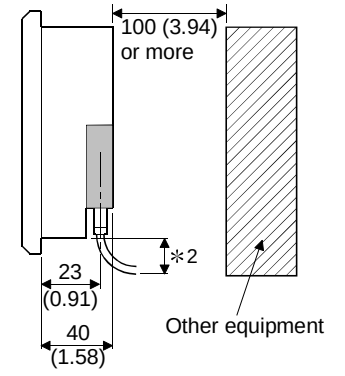
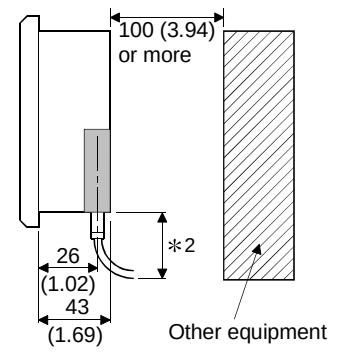
∗1: For the dimensions of A and B, see the panel cut dimensions of each GOT (Section 6.1.2).

(2) When A9GT-QBUS2S/A9GT-BUS2S is used

GOT rear	GOT side	
	For A975GOT, A970GOT [mm (inch)]	For A985GOT(-V), A960GOT [mm (inch)]
		

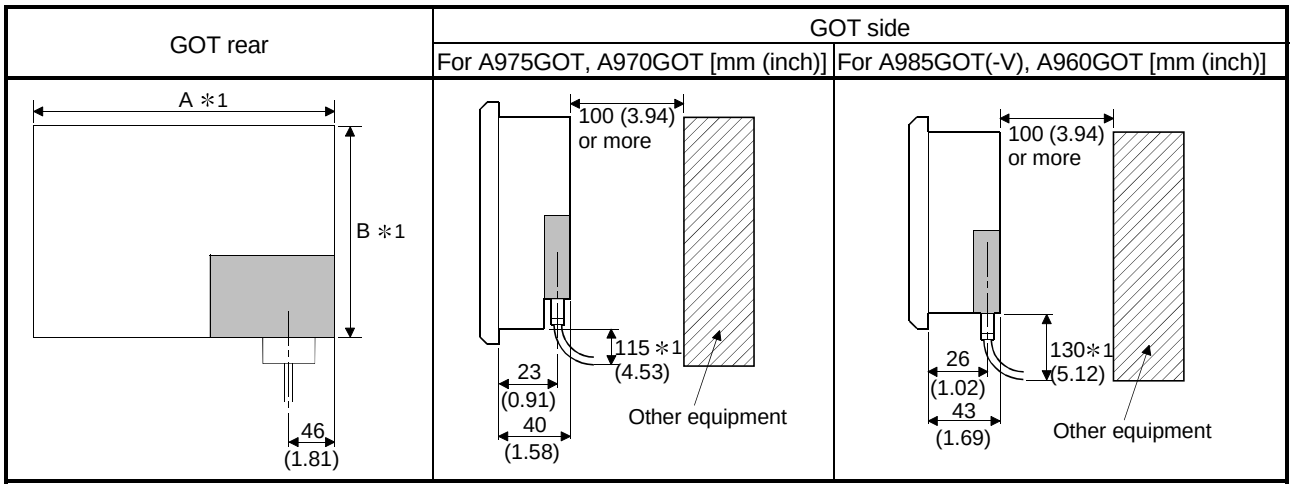
∗1: For the dimensions of A and B, see the panel cut dimensions of each GOT (Section 6.1.2).

(3) When A9GT-RS2/A9GT-RS2T is used

GOT rear	GOT side	
	For A975GOT, A970GOT [mm (inch)]	For A985GOT(-V), A960GOT [mm (inch)]
		

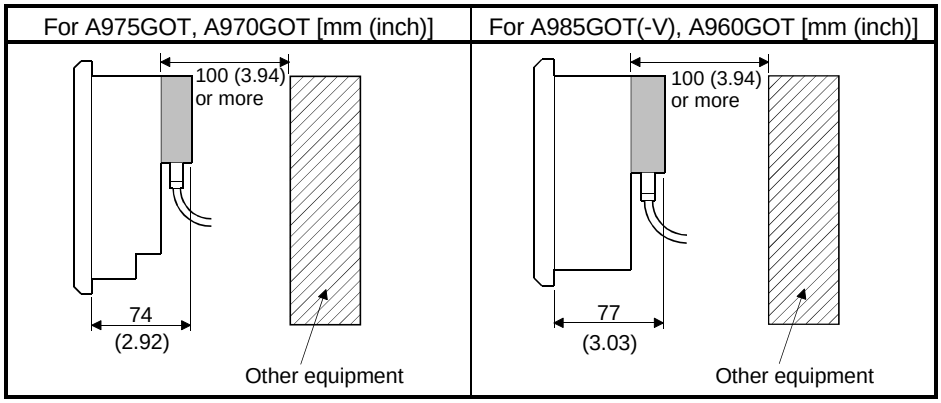
∗1: For the dimensions of A and B, see the panel cut dimensions of each GOT (Section 6.1.2).
∗2: Depends on the dimensions of the converter and cable used.

(4) When A9GT-RS4 is used

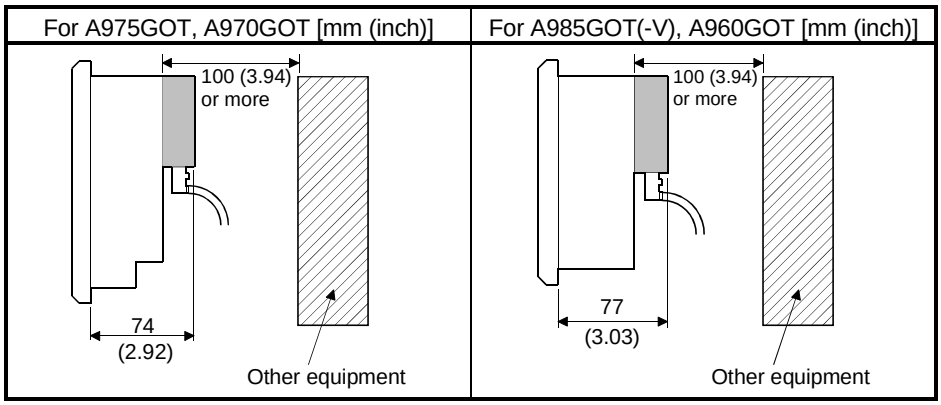


∗1: Dimension for use of the AC□R4-25P. When the other cable is used, the dimension depends on the converter and cable used.

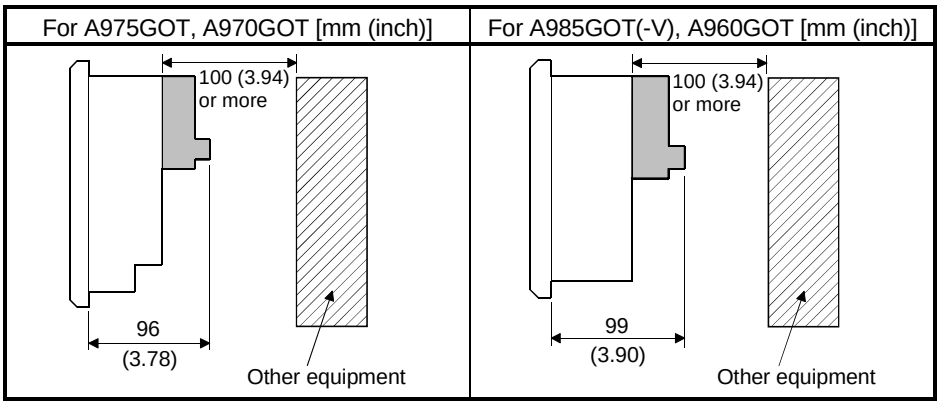
(5) When A7GT-J71AP23/A7GT-J71LP23/A9GT-QJ71LP23 is used



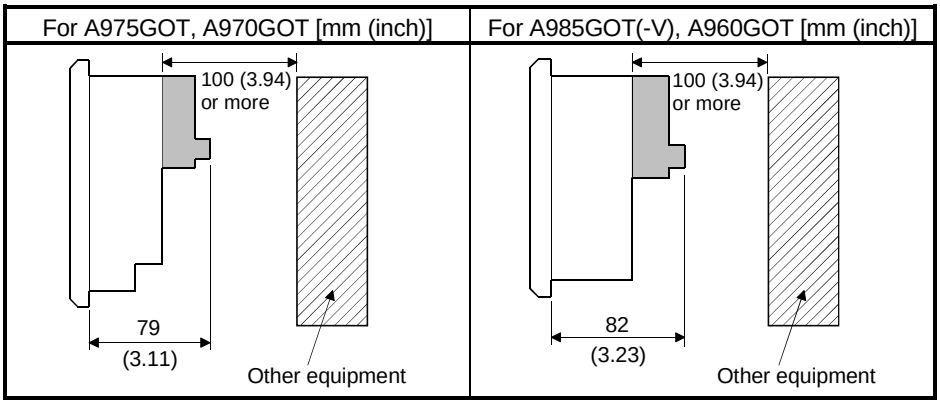
(6) When A7GT-J71AR23/A7GT-J71BR13/A9GT-QJ71BR13 is used



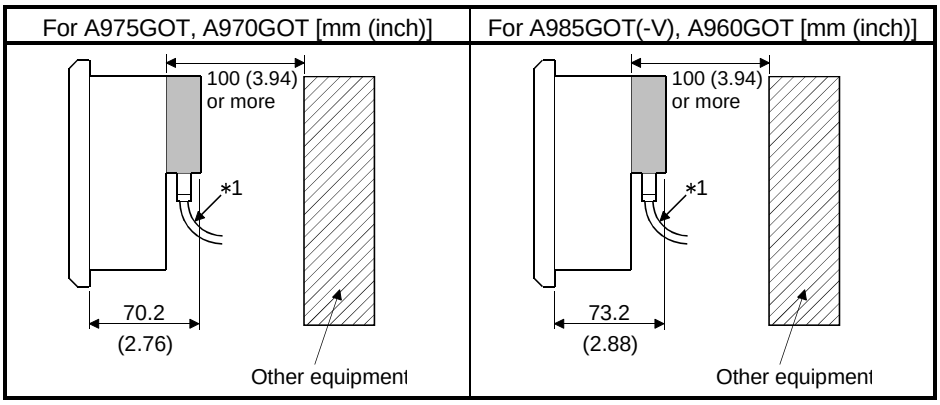
(7) When A7GT-J71AT23B is used



(8) When A8GT-J61BT13/A8GT-J61BT15 is used



(9) When A9GT-J71E71-T is used



*1: The bending radius (R1 : standard value) in the proximity of connector should be at least 4 times the external form of the cable.

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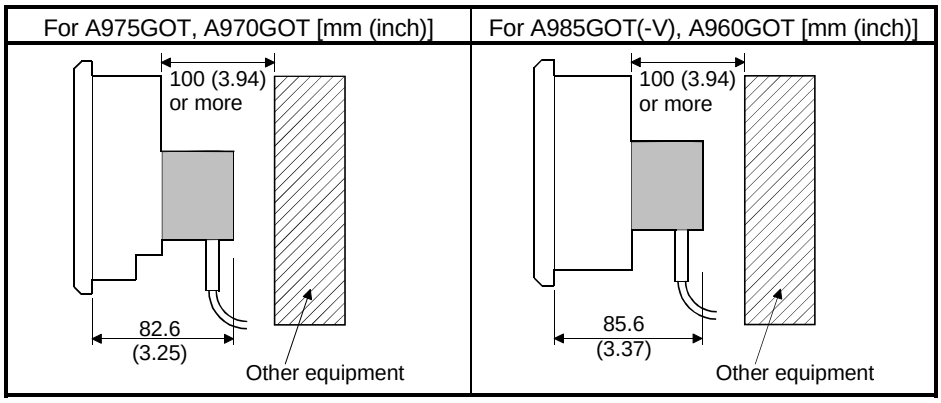
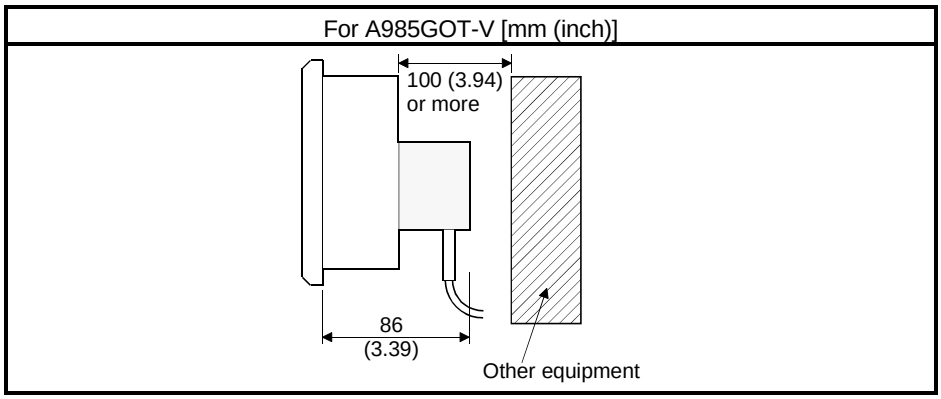
(10) When A9GT-70KBF is used



(11) When A9GT-80V4R1/A9GT-80V4/A9GT-80R1 is used

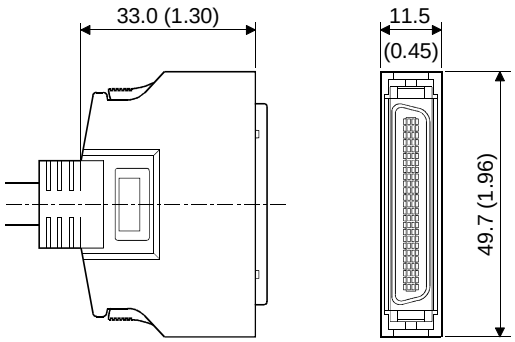


Appendix 3 External Dimensions of Bus Connection Cables

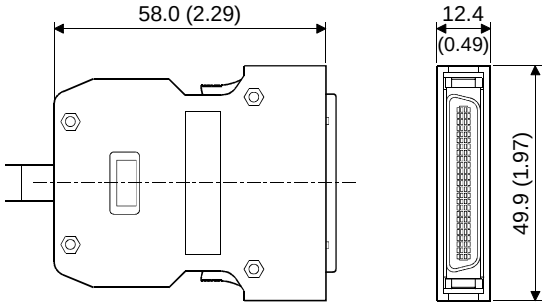
Type	Connector type		Cable Diameter [mm]
	GOT side	PLC side	
QC＊NB	(1) in figure below	(4) in figure below	9.3
A9GT-QC＊BS	(1) in figure below	(4) in figure below	
A1SC＊B	(1) in figure below	(1) in figure below	9.0
A8GT-C＊NB	(1) in figure below	(3) in figure below	9.5
A8GT-C＊EXSS ＊1	(1) in figure below	(2) in figure below	
A8GT-C＊BS ＊1	(1) in figure below	(2) in figure below	

＊1: Provided with the earth cable (1m).

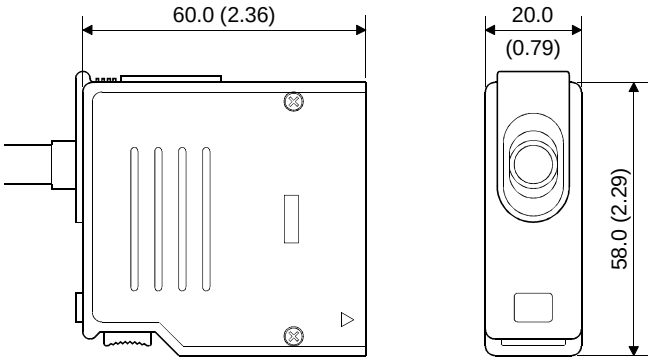
(1)



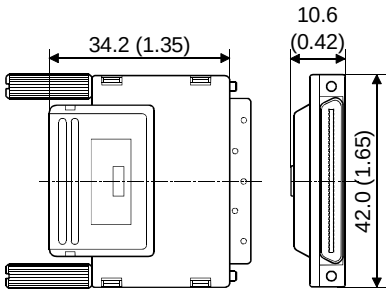
(2)



(3)



(4)



Unit: mm (inch)

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Appendix 4 Specifications of former models

Specifications of former GOT-A900 series models are given below.

Appendix 4.1 Performance specifications of the A975GOT-TBA/TBD, A970GOT-TBA/TBD

Item		Specifications	
		A975GOT-TBA, A975GOT-TBD	A970GOT-TBA, A970GOT-TBD
Display section ＊1	Type	TFT color liquid crystal	
	Resolution	640 × 480 dots	
	Display size	211 (8.31) × 158 (6.23) mm (inch)	
	Display color	256 color	16 color
	Intensity	250 cd/m^2 (Average intensity of liquid crystal only)	
	Display angle	80 degrees (right, left, up and down)	
Backlight		Cold cathode fluorescent tube backlight (Backlight OFF/screen saving time setting allowed)	
Touch panel	Number of touch keys	1200 points (30 lines × 40 columns)	
	Key size	Minimum 16 × 16 dots (per key)	
	Repeat function	No	
Memory ＊2	Type	Flash ROM	
	Application	For monitor screen data storage, for OS storage	
	Capacity	1M byte built-in (user area), max. 8M bytes increasable	
Communication board slot ＊3		For communication board loading, 1 slot	
Communication unit interface ＊3		For communication unit loading, 1 channel	
Option unit interface		For option unit loading, 1 channel	
PC card interface		For PC card loading, 1 channel	
Memory board slot		For memory board loading, 1 slot	
RS-232C interface		For connection of personal computer for graphics software, for bar-code reader connection, 1 channel	
Printer interface ＊4		For parallel printer connection, 1 channel	
Speech output terminal		For external speaker connection (3W + 3W or higher recommended) (stereo mini-jack), 1 channel each for L/R (2Vp-p, 0.4mW (for rated load 10kΩ)), compatible speech file: Windows WAV format, 8.000kHz, 16-bit monaural (8 s/speech file)	
Buzzer output		Single tone (tone length adjustable)	
Life ＊5	Display section ＊6	41,000h (Operating ambient temperature: 25°C)	
	Backlight ＊6	40,000h (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
	Touch key	1 million times or more (operating force 0.98N max.)	
	Built-in memory	Number of write times: 100,000 times	
Environmental protective structure		Equivalent to IP65f (front section)	
Outline dimensions		297 (11.7) (W) × 208 (8.2) (H) × 46 (1.81) (D) mm (inch)	
Panel cutting dimensions		289 (11.39) (W) × 200 (7.88) (H) mm (inch)	
Weight		1.8 (4.0) kg (lb)	
Compatible software package ＊7		SW0D5C-GTWORKS-E Version A or later, SW1D5C-GOTRE-PACK Version A or later	

＊1: Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements.
Please note that these dots appear due to its characteristic and are not caused by product defect.

＊2: The built-in memory is ROM which allows old data to be overwritten by new data. (Data backup power supply is not needed.)

＊3: Note that either of the communication board slot and communication unit interface may only be used.

＊4: Refer to the [3.2.1] for details on the specifications are those of the printer interface.

＊5: When parts must be changed, consult your sales representative.

＊6: The screen saving/back light OFF function of GOT is provide to prevent images from becoming permanently etched on the display and extend the back light life.

＊7: GT Works2 and GT Designer2 are supported from the first version (Version1.00A).

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not , compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
(2) The Mitsubishi programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable logic controller applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable logic controller range of applications.
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

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A985GOT/A975GOT/A970GOT/A960GOT

User's Manual

MODEL	A900GOT-U(SHO)-E
MODEL CODE	1DM099
SH(NA)-4005-M(0409)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : 1-8-12, OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212,JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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